



SEQUENCE LISTING

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<120> A method for amplification of nucleic acids

<130> MUKAI=1

<140> 09/935,338  
<141> 2001-08-23

<150> JP11-076966  
<151> 1999-03-19

<150> JP11-370035  
<151> 1999-12-27

<150> JP2000-251981  
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<150> JP2000-284419  
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<150> JP2000-288750  
<151> 2000-09-22

<150> JP2001-104191  
<151> 2001-04-03

<150> PCT/JP00/01534  
<151> 2000-03-14

<160> 290

<170> PatentIn version 3.2

<210> 1  
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<220>  
<223> Synthetic DNA corresponding to a portion of human transferrin  
receptor-encoding sequence used as a template

<400> 1  
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 ccttgcatat tctgagcagt ttctttctgt ttttgcgag 99

<210> 2  
 <211> 22  
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<220>  
 <223> Designed oligonucleotide primer to amplify a portion of human transferrin receptor-encoding sequence

<400> 2  
 cagcaactgg gccagcaaag tt 22

<210> 3  
 <211> 22  
 <212> DNA  
 <213> Artificial

<220>  
 <223> Designed oligonucleotide primer to amplify a portion of human transferrin receptor-encoding sequence

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 gcaaaaacag aaagaaactg ct 22

<210> 4  
 <211> 22  
 <212> DNA  
 <213> Artificial

<220>  
 <223> Designed chimeric oligonucleotide primer to amplify a portion of human transferrin receptor-encoding sequence. "nucleotide 21 is ribonucleotide-other nucleotides are deoxyribonucleotides"

<400> 4  
 cagcaactgg gccagcaaag ut 22

<210> 5  
 <211> 22  
 <212> DNA  
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<220>  
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<400> 5

gcaaaaacag aaagaaactg ct

22

<210> 6  
<211> 22  
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<220>

<223> Designed chimeric oligonucleotide primer to amplify a portion of human transferrin receptor-encoding sequence. "nucleotide 22 is ribonucleotide-other nucleotides are deoxyribonucleotides"

<400> 6  
cagcaactgg gccagcaaag tu

22

<210> 7  
<211> 22  
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<220>

<223> Designed chimeric oligonucleotide primer to amplify a portion of human transferrin receptor-encoding sequence. "nucleotides 21 to 22 are ribonucleotides-other nucleotides are deoxyribonucleotides"

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gcaaaaacag aaagaaactg cu

22

<210> 8  
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<212> DNA  
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<220>

<223> Designed chimeric oligonucleotide primer to amplify a portion of human transferrin receptor-encoding sequence. "nucleotides 21 to 22 are ribonucleotides-other nucleotides are deoxyribonucleotides"

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cagcaactgg gccagcaaag uu

22

<210> 9  
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<212> DNA  
<213> Artificial

<220>

<223> Designed chimeric oligonucleotide primer to amplify a portion of human transferrin receptor-encoding sequence. "nucleotides 21 to 22 are ribonucleotides-other nucleotides are deoxyribonucleotides"

<400> 9  
 gcaaaaacag aaagaaactg cu 22

<210> 10  
 <211> 22  
 <212> DNA  
 <213> Artificial

<220>  
 <223> Designed chimeric oligonucleotide primer to amplify a portion of human transferrin receptor-encoding sequence. "nucleotides 19 to 20 are ribonucleotides-other nucleotides are deoxyribonucleotides"

<400> 10  
 cagcaactgg gccagcaaag tt 22

<210> 11  
 <211> 22  
 <212> DNA  
 <213> Artificial

<220>  
 <223> Designed chimeric oligonucleotide primer to amplify a portion of human transferrin receptor-encoding sequence. "nucleotides 19 to 20 are ribonucleotides-other nucleotides are deoxyribonucleotides"

<400> 11  
 gcaaaaacag aaagaaacug ct 22

<210> 12  
 <211> 26  
 <212> DNA  
 <213> Artificial

<220>  
 <223> Designed oligonucleotide used as a probe for detecting an amplified portion of human transferrin receptor-encoding sequence

<400> 12  
 tgctttccct ttccttgcat attctg 26

<210> 13  
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 <212> DNA  
 <213> Artificial

<220>  
 <223> Designed chimeric oligonucleotide primer designated as pUC19 upper(2)NN to amplify a portion of plasmid pUC19. "nucleotides 24 to 25 are ribonucleotides-other nucleotides are deoxyribonucleotides"

<400> 13  
attgcttaat cagtgaggca cctau 25

<210> 14  
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<213> Artificial

<220>  
<223> Designed chimeric oligonucleotide primer designated as pUC19 lower NN to amplify a portion of plasmid pUC19. "nucleotides 24 to 25 are ribonucleotides-other nucleotides are deoxyribonucleotides"

<400> 14  
gataacactg cggccaactt actuc 25

<210> 15  
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<213> Artificial

<220>  
<223> Designed chimeric oligonucleotide primer to amplify a portion of plasmid pUC19. "nucleotides 24 to 25 are ribonucleotides-other nucleotides are deoxyribonucleotides"

<400> 15  
actggcgaac tacttactct agcuu 25

<210> 16  
<211> 26  
<212> DNA  
<213> Artificial

<220>  
<223> Designed chimeric oligonucleotide primer designated as pUC19 lower 542 to amplify a portion of plasmid pUC19. "nucleotides 24 to 25 are ribonucleotides-other nucleotides are deoxyribonucleotides"

<400> 16  
agtcaccaga aaagcatctt acggau` 26

<210> 17  
<211> 25  
<212> DNA  
<213> Artificial

<220>  
<223> Designed chimeric oligonucleotide primer to amplify a portion of plasmid pUC19. "nucleotides 24 to 25 are ribonucleotides-other nucleotides are deoxyribonucleotides"

<400> 17  
 gctcatgaga caataaccct gataa
 25

<210> 18  
 <211> 25  
 <212> DNA  
 <213> Artificial

<220>  
 <223> Designed oligonucleotide primer designated as pUC19 upper 150 to  
 amplify a portion of plasmid pUC19. "nucleotides 23 to 25 are  
 ribonucleotides-other nucleotides are deoxyribonucleotides"

<400> 18  
 ggtgtcacgc tcgtcgtttg gtaug
 25

<210> 19  
 <211> 25  
 <212> DNA  
 <213> Artificial

<220>  
 <223> Designed chimeric oligonucleotide primer designated as pUC19  
 lower NN to amplify a portion of plasmid pUC19. "nucleotides 23  
 to 25 are ribonucleotides-other nucleotides are  
 deoxyribonucleotides"

<400> 19  
 gataacactg cggccaactt acuuc
 25

<210> 20  
 <211> 25  
 <212> DNA  
 <213> Artificial

<220>  
 <223> Designed chimeric oligonucleotide primer designated as pUC19  
 upper 249 to amplify a portion of plasmid pUC19. "nucleotides 23  
 to 25 are ribonucleotides-other nucleotides are  
 deoxyribonucleotides"

<400> 20  
 cgcctccatc cagtctatta atugu
 25

<210> 21  
 <211> 22  
 <212> DNA  
 <213> Artificial

<220>  
 <223> Designed chimeric oligonucleotide primer to amplify a portion of  
 human transferrin receptor-encoding sequence. "nucleotides 20 to  
 22 are ribonucleotides-other nucleotides are  
 deoxyribonucleotides"

<400> 21  
ctgattgaga ggattcctga gu 22

<210> 22  
<211> 22  
<212> DNA  
<213> Artificial

<220>  
<223> Designed chimeric oligonucleotide primer to amplify a portion of human transferrin receptor-encoding sequence. "nucleotides 21 to 22 are ribonucleotides-other nucleotides are deoxyribonucleotides"

<400> 22  
tagggagaga ggaagtgata cu 22

<210> 23  
<211> 25  
<212> DNA  
<213> Artificial

<220>  
<223> Designed chimeric oligonucleotide primer designated as pUC19 upper(2)NN to amplify a portion of plasmid pUC19. "nucleotides 24 to 25 are ribonucleotides-other nucleotides are deoxyribonucleotides"

<400> 23  
attgcttaat cagtgaggca cctau 25

<210> 24  
<211> 25  
<212> DNA  
<213> Artificial

<220>  
<223> Designed chimeric oligonucleotide primer designated as pUC19 upper(2)NN to amplify a portion of plasmid pUC19. "nucleotides 24 to 25 are ribonucleotides-other nucleotides are deoxyribonucleotides"

<400> 24  
attgcttaat cagtgaggca cctaa 25

<210> 25  
<211> 25  
<212> DNA  
<213> Artificial

<220>  
<223> Designed chimeric oligonucleotide primer designated as pUC19 upper(2)NN to amplify a portion of plasmid pUC19. "nucleotides 24

to 25 are ribonucleotides-other nucleotides are  
deoxyribonucleotides"

<400> 25  
attgcttaat cagtgaggca cctac 25

<210> 26  
<211> 25  
<212> DNA  
<213> Artificial

<220>  
<223> Designed chimeric oligonucleotide primer designated as pUC19  
upper(2)NN to amplify a portion of plasmid pUC19. "nucleotides 24  
to 25 are ribonucleotides-other nucleotides are  
deoxyribonucleotides"

<400> 26  
attgcttaat cagtgaggca cctag 25

<210> 27  
<211> 22  
<212> DNA  
<213> Artificial

<220>  
<223> Designed chimeric oligonucleotide primer to amplify a portion of  
human transferrin receptor-encoding sequence. "nucleotides 21 to  
22 are ribonucleotides-other nucleotides are  
deoxyribonucleotides"

<400> 27  
ctgattgaga ggattcctga gu 22

<210> 28  
<211> 22  
<212> DNA  
<213> Artificial

<220>  
<223> Designed chimeric oligonucleotide primer to amplify a portion of  
human transferrin receptor-encoding sequence. "nucleotides 21 to  
22 are ribonucleotides-other nucleotides are  
deoxyribonucleotides"

<400> 28  
tagggagaga ggaagtgata cu 22

<210> 29  
<211> 24  
<212> DNA  
<213> Artificial

<220>



<223> Designed chimeric oligonucleotide primer designated as MF2N3(24) to amplify a portion of plasmid pUC19-249 or plasmid pUC19-911. "nucleotides 22 to 24 are ribonucleotides-other nucleotides are deoxyribonucleotides"

<400> 29  
gctgcaaggc gattaagttg ggua 24

<210> 30  
<211> 24  
<212> DNA  
<213> Artificial

<220>  
<223> Designed oligonucleotide primer designated as MR1N3(24) to amplify a portion of plasmid pUC19-249 or plasmid pUC19-911. "nucleotides 22 to 24 are ribonucleotides-other nucleotides are deoxyribonucleotides"

<400> 30  
ctttatgctt ccggctcgta tguu 24

<210> 31  
<211> 25  
<212> DNA  
<213> Artificial

<220>  
<223> Designed chimeric oligonucleotide primer designated as pUC19 upper 249 to amplify a portion of plasmid pUC19. "nucleotides 24 to 25 are ribonucleotides-other nucleotides are deoxyribonucleotides"

<400> 31  
cgctccatc cagtctatta attgu 25

<210> 32  
<211> 25  
<212> DNA  
<213> Artificial

<220>  
<223> Designed oligonucleotide primer designated as pUC19 upper 150 to amplify a portion of plasmid pUC19

<400> 32  
ggtgtcacgc tcgtcgtttg gtatg 25

<210> 33  
<211> 25  
<212> DNA  
<213> Artificial

<220>

<223> Designed oligonucleotide primer designated as pUC19 upper 249 to amplify a portion of plasmid pUC19

<400> 33  
 cgcctccatc cagtctatta attgt 25

<210> 34  
 <211> 25  
 <212> DNA  
 <213> Artificial

<220>  
 <223> Designed oligonucleotide primer designated as pUC19 lower NN to amplify a portion of plasmid pUC19

<400> 34  
 gataacactg cggccaactt acttc 25

<210> 35  
 <211> 30  
 <212> DNA  
 <213> Artificial

<220>  
 <223> Designed chimeric oligonucleotide primer to amplify a portion of plasmid pUC19. "nucleotides 28 to 30 are ribonucleotides-other nucleotides are deoxyribonucleotides"

<400> 35  
 ggatgtgctg caaggcgatt aagttgggua 30

<210> 36  
 <211> 30  
 <212> DNA  
 <213> Artificial

<220>  
 <223> Designed chimeric oligonucleotide primer designated as MR1N3 to amplify a portion of plasmid pUC19. "nucleotides 28 to 30 are ribonucleotides-other nucleotides are deoxyribonucleotides"

<400> 36  
 ttacacttt atgcttccgg ctcgatatguu 30

<210> 37  
 <211> 30  
 <212> DNA  
 <213> Artificial

<220>  
 <223> Designed oligonucleotide primer to amplify a portion of plasmid pUC19

<400> 37

ggatgtgctg caaggcgatt aagttgggta

30

<210> 38  
<211> 30  
<212> DNA  
<213> Artificial

<220>

<223> Designed oligonucleotide primer designated as MR1N3 to amplify a portion of plasmid pUC19

<400> 38  
tttacacttt atgcttccgg ctcgtatggt

30

<210> 39  
<211> 30  
<212> DNA  
<213> Artificial

<220>

<223> Synthetic RNA used as a probe for detecting an amplified portion of plasmid pUC19

<400> 39  
ugauccecca uguugugcaa aaaagcgguu

30

<210> 40  
<211> 25  
<212> DNA  
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<220>

<223> Designed chimeric oligonucleotide primer designated as pUC19 upper 150 to amplify a portion of plasmid pUC19. "nucleotides 24 to 25 are ribonucleotides-other nucleotides are deoxyribonucleotides"

<400> 40  
ggtgtcacgc tcgtcgtttg gtaug

25

<210> 41  
<211> 30  
<212> DNA  
<213> Artificial

<220>

<223> Designed chimeric oligonucleotide primer designated as MR1N3 to amplify a portion of plasmid pUC19. "nucleotides 28 to 30 are ribonucleotides-other nucleotides are deoxyribonucleotides"

<400> 41  
tttacacttt atgcttccgg ctcgtatguu

30

<210> 42  
 <211> 17  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed oligonucleotide primer designated as M13M4  
  
 <400> 42  
 gttttcccag tcacgac 17  
  
 <210> 43  
 <211> 18  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed chimeric oligonucleotide primer to amplify a portion of  
 vero toxin 1-encoding sequence from hemorrhagic Escherichia coli  
 O-157. "nucleotides 16 to 18 are ribonucleotides-other  
 nucleotides are deoxyribonucleotides"  
  
 <400> 43  
 agttaatgtg gtggcgaa 18  
  
 <210> 44  
 <211> 17  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed chimeric oligonucleotide primer to amplify a portion of  
 vero toxin 1-encoding sequence from hemorrhagic Escherichia coli  
 O-157. "nucleotides 15 to 17 are ribonucleotides-other  
 nucleotides are deoxyribonucleotides"  
  
 <400> 44  
 gactcttcca tctgcca 17  
  
 <210> 45  
 <211> 18  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed chimeric oligonucleotide primer to amplify a portion of  
 vero toxin 2-encoding sequence from hemorrhagic Escherichia coli  
 O-157. "nucleotides 16 to 18 are ribonucleotides-other  
 nucleotides are deoxyribonucleotides"  
  
 <400> 45  
 ttcggtatcc tattcccg 18  
  
 <210> 46

<211> 18  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed chimeric oligonucleotide primer to amplify a portion of  
 vero toxin 2-encoding sequence from hemorrhagic Escherichia coli  
 O-157. "nucleotides 16 to 18 are ribonucleotides-other  
 nucleotides are deoxyribonucleotides"  
  
 <400> 46  
 tctctgtgca ttgtauua 18  
  
 <210> 47  
 <211> 22  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed oligonucleotide primer designated as MCR-F to amplify a  
 long DNA fragment  
  
 <400> 47  
 ccattcaggc tgcgcaactg tt 22  
  
 <210> 48  
 <211> 22  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed oligonucleotide primer designated as MCR-R to amplify a  
 long DNA fragment  
  
 <400> 48  
 tggcacgaca ggtttcccga ct 22  
  
 <210> 49  
 <211> 24  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed chimeric oligonucleotide primer designated as MF2N3(24)  
 to amplify a long DNA fragment. "nucleotides 22 to 24 are  
 ribonucleotides-other nucleotides are deoxyribonucleotides"  
  
 <400> 49  
 gctgcaaggc gattaagttg ggua 24  
  
 <210> 50  
 <211> 24  
 <212> DNA  
 <213> Artificial

<220>  
 <223> Designed chimeric oligonucleotide primer designated as MR1N3(24)  
 to amplify a long DNA fragment. "nucleotides 22 to 24 are  
 ribonucleotides-other nucleotides are deoxyribonucleotides"

<400> 50  
 ctttatgctt ccggctcgta tguu
 24

<210> 51  
 <211> 20  
 <212> DNA  
 <213> Artificial

<220>  
 <223> Designed oligonucleotide primer to amplify a portion of  
 bacteriophage lambda DNA

<400> 51  
 aacaacaaga aactggtttc
 20

<210> 52  
 <211> 20  
 <212> DNA  
 <213> Artificial

<220>  
 <223> Designed oligonucleotide primer to amplify a portion of  
 bacteriophage lambda DNA

<400> 52  
 gcaatgcatg acgactgggg
 20

<210> 53  
 <211> 17  
 <212> DNA  
 <213> Artificial

<220>  
 <223> Designed chimeric oligonucleotide primer to amplify a portion of  
 bacteriophage lambda DNA. "nucleotides 16 to 17 are  
 ribonucleotides-other nucleotides are deoxyribonucleotides"

<400> 53  
 gttttcccag tcacgac
 17

<210> 54  
 <211> 17  
 <212> DNA  
 <213> Artificial

<220>  
 <223> Designed chimeric oligonucleotide primer to amplify a portion of  
 bacteriophage lambda DNA. "nucleotides 16 to 17 are

ribonucleotides-other nucleotides are deoxyribonucleotides"

<400> 54  
caggaaacag ctatgac 17

<210> 55  
<211> 20  
<212> DNA  
<213> Artificial

<220>  
<223> Designed oligonucleotide primer to amplify a portion of  
bacteriophage lambda DNA

<400> 55  
gtacggtcat catctgacac 20

<210> 56  
<211> 20  
<212> DNA  
<213> Artificial

<220>  
<223> Designed oligonucleotide primer to amplify a portion of  
bacteriophage lambda DNA

<400> 56  
gcaatcggca tgttaaacgc 20

<210> 57  
<211> 20  
<212> DNA  
<213> Artificial

<220>  
<223> Designed oligonucleotide primer to amplify a portion of  
bacteriophage lambda DNA

<400> 57  
cgccatcctg ggaagactcc 20

<210> 58  
<211> 44  
<212> DNA  
<213> Artificial

<220>  
<223> Designed oligonucleotide primer designated as R1-S1 to amplify a  
portion of bacteriophage lambda DNA

<400> 58  
tttcacacag gaaacagcta tgacaacaac aagaaactgg tttc 44

<210> 59  
 <211> 44  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed oligonucleotide primer designated as R1-A3 to amplify a  
 portion of bacteriophage lambda DNA  
  
 <400> 59  
 ttccacacag gaaacagcta tgacgcaatg catgacgact gggg 44  
  
 <210> 60  
 <211> 62  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed oligonucleotide primer designated as R2-S1 to amplify a  
 portion of bacteriophage lambda DNA  
  
 <400> 60  
 attgtgagcg gataacaatt tcacacagga aacagctatg acaacaacaa gaaactgggtt 60  
 tc 62  
  
 <210> 61  
 <211> 62  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed oligonucleotide primer designated as R2-A3 to amplify a  
 portion of bacteriophage lambda DNA  
  
 <400> 61  
 attgtgagcg gataacaatt tcacacagga aacagctatg acgcaatgca tgacgactgg 60  
 gg 62  
  
 <210> 62  
 <211> 95  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed oligonucleotide primer designated as R3-S1 to amplify a  
 portion of bacteriophage lambda DNA  
  
 <400> 62  
 cactttatgc ttccggctcg tatgttgtgt ggaattgtga gcggataaca atttcacaca 60  
 ggaaacagct atgacaacaa caagaaactg gtttc 95



<210> 63  
 <211> 95  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed oligonucleotide primer designated as R3-A3 to amplify a  
 portion of bacteriophage lambda DNA  
  
 <400> 63  
 cactttatgc ttccggctcg tatgttgtgt ggaattgtga gcggataaca atttcacaca 60  
 ggaaacagct atgacgcaat gcatgacgac tgggg 95  
  
 <210> 64  
 <211> 17  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed chimeric oligonucleotide primer designated as M13RV-2N  
 17mer. "nucleotides 16 to 17 are ribonucleotides-other  
 nucleotides are deoxyribonucleotides"  
  
 <400> 64  
 caggaaacag ctatgac 17  
  
 <210> 65  
 <211> 20  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed chimeric oligonucleotide primer designated as M13RV-2N  
 20mer. "nucleotides 19 to 20 are ribonucleotides-other  
 nucleotides are deoxyribonucleotides"  
  
 <400> 65  
 acacaggaaa cagctatgac 20  
  
 <210> 66  
 <211> 70  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed oligonucleotide primer to amplify a portion of  
 CDC2-related protein kinase PISSLRE gene  
  
 <400> 66  
 gagttcgtgt ccgtacaact atttcacaca ggaaacagct atgacccaac aagagcctat 60  
 agcttcgctc 70

<210> 67  
 <211> 67  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed oligonucleotide primer to amplify a portion of  
 CDC2-related protein kinase PISSLRE gene  
  
 <400> 67  
 tcgaaatcag ccacagcgcc atttcacaca ggaaacagct atgacccgct gtctttgagt 60  
 tgtggtg 67  
  
 <210> 68  
 <211> 70  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed oligonucleotide primer to amplify a portion of type ii  
 cytoskeletal 11 keratin gene  
  
 <400> 68  
 gagttcgtgt ccgtacaact atttcacaca ggaaacagct atgacgctat tctgacatca 60  
 ctttcagac 70  
  
 <210> 69  
 <211> 66  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed oligonucleotide primer to amplify a portion of type ii  
 cytoskeletal 11 keratin gene  
  
 <400> 69  
 tcgaaatcag ccacagcgcc atttcacaca ggaaacagct atgacgaatt ccaactggtgg 60  
 cagtag 66  
  
 <210> 70  
 <211> 62  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed oligonucleotide primer to amplify a portion of  
 bacteriophage lambda DNA  
  
 <400> 70  
 attgtgagcg gataacaatt tcacacagga aacagctatg acgtacgggc atcatctgac 60  
 ac 62

<210> 71  
 <211> 62  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed oligonucleotide primer to amplify a portion of  
 bacteriophage lambda DNA  
  
 <400> 71  
 attgtgagcg gataacaatt tcacacagga aacagctatg acatgcgccg cctgaaccac 60  
 ca 62  
  
 <210> 72  
 <211> 62  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed oligonucleotide primer to amplify a portion of  
 bacteriophage lambda DNA  
  
 <400> 72  
 attgtgagcg gataacaatt tcacacagga aacagctatg acctgctctg ccgcttcacg 60  
 ca 62  
  
 <210> 73  
 <211> 62  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed oligonucleotide primer to amplify a portion of  
 bacteriophage lambda DNA  
  
 <400> 73  
 attgtgagcg gataacaatt tcacacagga aacagctatg acgcaatcgg catgttaaac 60  
 gg 62  
  
 <210> 74  
 <211> 24  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed oligonucleotide primer designated as MF2N3(24) to  
 amplify a portion of plasmid pUC19-249 or plasmid pUC19-911  
  
 <400> 74  
 gctgcaaggc gattaagttg ggta 24

<210> 75  
 <211> 24  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed oligonucleotide primer designated as MR1N3(24) to  
 amplify a portion of plasmid pUC19-249 or plasmid pUC19-911  
  
 <400> 75  
 ctttatgctt ccggctcgta tggt 24  
  
 <210> 76  
 <211> 20  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed chimeric oligonucleotide primer designated as M13M4-3N  
 20mer. "nucleotides 18 to 20 are ribonucleotides-other  
 nucleotides are deoxyribonucleotides"  
  
 <400> 76  
 agggttttcc cagtcacgac 20  
  
 <210> 77  
 <211> 20  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed chimeric oligonucleotide primer designated as M13RV-3N  
 20mer. "nucleotides 18 to 20 are ribonucleotides-other  
 nucleotides are deoxyribonucleotides"  
  
 <400> 77  
 acacaggaaa cagctatgac 20  
  
 <210> 78  
 <211> 24  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed chimeric oligonucleotide primer designated as M13M4-3N  
 24mer. "nucleotides 22 to 24 are ribonucleotides-other  
 nucleotides are deoxyribonucleotides"  
  
 <400> 78  
 cgccagggtt ttcccagtca cgac 24  
  
 <210> 79

<211> 24  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed oligonucleotide primer designated as M13RV-3N 24mer.  
 "nucleotides 22 to 24 are ribonucleotides-other nucleotides are  
 deoxyribonucleotides"  
  
 <400> 79  
 tttcacacag gaaacagcta tgac 24  
  
 <210> 80  
 <211> 69  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed oligonucleotide primer designated as 5'ID to amplify a  
 portion of cyclin A DNA  
  
 <400> 80  
 tcgaaatcag ccacagcgcc atttcacaca ggaaacagct atgacatgtt ttgggagaat 60  
 taagtctga 69  
  
 <210> 81  
 <211> 69  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed oligonucleotide primer designated as 3'ID to amplify a  
 portion of cyclin A DNA  
  
 <400> 81  
 gagttcgtgc cgtacaacta tttcacacag gaaacagcta tgacttacag atttagtgtc 60  
 tctggtggg 69  
  
 <210> 82  
 <211> 16  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed oligonucleotide primer designated as M13RV-2N 16mer.  
 "nucleotides 15 to 16 are ribonucleotides-other nucleotides are  
 deoxyribonucleotides"  
  
 <400> 82  
 aggaaacagc tatgac 16  
  
 <210> 83

<211> 27  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed chimeric oligonucleotide primer to amplify a portion of human transferrin receptor-encoding sequence. "nucleotides 21 to 22 are ribonucleotides-other nucleotides are deoxyribonucleotides"  
  
 <400> 83  
 cagcaactgg gccagcaaag uugagaa 27  
  
 <210> 84  
 <211> 27  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed chimeric oligonucleotide primer to amplify a portion of human transferrin receptor-encoding sequence. "nucleotides 21 to 22 are ribonucleotides-other nucleotides are deoxyribonucleotides"  
  
 <400> 84  
 gcaaaaacag aaagaaactg cucagaa 27  
  
 <210> 85  
 <211> 26  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed chimeric oligonucleotide primer to amplify a portion of human transferrin receptor-encoding sequence. "nucleotides 21 to 22 are ribonucleotides-other nucleotides are deoxyribonucleotides"  
  
 <400> 85  
 cagcaactgg gccagcaaag uugaga 26  
  
 <210> 86  
 <211> 26  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed chimeric oligonucleotide primer to amplify a portion of human transferrin receptor-encoding sequence. "nucleotides 21 to 22 are ribonucleotides-other nucleotides are deoxyribonucleotides"  
  
 <400> 86  
 gcaaaaacag aaagaaactg cucaga 26

<210> 87  
 <211> 25  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed chimeric oligonucleotide primer to amplify a portion of human transferrin receptor-encoding sequence. "nucleotides 21 to 22 are ribonucleotides-other nucleotides are deoxyribonucleotides"  
  
 <400> 87  
 cagcaactgg gccagcaaag uugag 25  
  
 <210> 88  
 <211> 25  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed chimeric oligonucleotide primer to amplify a portion of human transferrin receptor-encoding sequence. "nucleotides 21 to 22 are ribonucleotides-other nucleotides are deoxyribonucleotides"  
  
 <400> 88  
 gcaaaaacag aaagaaactg cucag 25  
  
 <210> 89  
 <211> 24  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed chimeric oligonucleotide primer to amplify a portion of human transferrin receptor-encoding sequence. "nucleotides 21 to 22 are ribonucleotides-other nucleotides are deoxyribonucleotides"  
  
 <400> 89  
 cagcaactgg gccagcaaag uuga 24  
  
 <210> 90  
 <211> 24  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed chimeric oligonucleotide primer to amplify a portion of human transferrin receptor-encoding sequence. "nucleotides 21 to 22 are ribonucleotides-other nucleotides are deoxyribonucleotides"  
  
 <400> 90

gcaaaaacag aaagaaactg cuca

24

<210> 91  
<211> 23  
<212> DNA  
<213> Artificial

<220>

<223> Designed chimeric oligonucleotide primer to amplify a portion of human transferrin receptor-encoding sequence. "nucleotides 21 to 22 are ribonucleotides-other nucleotides are deoxyribonucleotides"

<400> 91  
cagcaactgg gccagcaaag uug

23

<210> 92  
<211> 23  
<212> DNA  
<213> Artificial

<220>

<223> Designed chimeric oligonucleotide primer to amplify a portion of human transferrin receptor-encoding sequence. "nucleotides 21 to 22 are ribonucleotides-other nucleotides are deoxyribonucleotides"

<400> 92  
gcaaaaacag aaagaaactg cuc

23

<210> 93  
<211> 22  
<212> DNA  
<213> Artificial

<220>

<223> Designed chimeric oligonucleotide primer to amplify a portion of human transferrin receptor-encoding sequence. "nucleotides 21 to 22 are ribonucleotides-other nucleotides are deoxyribonucleotides"

<400> 93  
cagcaactgg gccagcaaag uu

22

<210> 94  
<211> 22  
<212> DNA  
<213> Artificial

<220>

<223> Designed chimeric oligonucleotide primer to amplify a portion of human transferrin receptor-encoding sequence. "nucleotides 21 to 22 are ribonucleotides-other nucleotides are deoxyribonucleotides"



<400> 94  
 gcaaaaacag aaagaaactg cu 22

<210> 95  
 <211> 22  
 <212> DNA  
 <213> Artificial

<220>  
 <223> Designed oligonucleotide primer to amplify a portion of human transferrin receptor-encoding sequence

<400> 95  
 caacttcaag gtttctgcc a gc 22

<210> 96  
 <211> 21  
 <212> DNA  
 <213> Artificial

<220>  
 <223> Designed oligonucleotide primer to amplify a portion of human transferrin receptor-encoding sequence

<400> 96  
 aatagtccaa gtagctagag c 21

<210> 97  
 <211> 20  
 <212> DNA  
 <213> Artificial

<220>  
 <223> PCR primer BsuII-3 for cloning a gene encoding a polypeptide having a RNaseHII activity from Bacillus caldotenax

<220>  
 <221> misc\_feature  
 <222> (15)..(15)  
 <223> n is a, c, g, or t

<400> 97  
 gtcgccagcg cagtnathyt 20

<210> 98  
 <211> 20  
 <212> DNA  
 <213> Artificial

<220>  
 <223> PCR primer BsuII-6 for cloning a gene encoding a polypeptide having a RNaseHII activity from Bacillus caldotenax

<220>  
 <221> misc\_feature  
 <222> (18)..(18)  
 <223> n is a, c, g, or t  
  
 <400> 98  
 cggtcctcg tcacyttngc 20  
  
 <210> 99  
 <211> 20  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> PCR primer RNII-S1 for cloning a gene encoding a polypeptide  
 having a RNaseHII activity from Bacillus caldotenax  
  
 <400> 99  
 cgcgcttttc cggcgtcagc 20  
  
 <210> 100  
 <211> 20  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> PCR primer RNII-S2 for cloning a gene encoding a polypeptide  
 having a RNaseHII activity from Bacillus caldotenax  
  
 <400> 100  
 acggcgcacg cttcaatttg 20  
  
 <210> 101  
 <211> 20  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> PCR primer RNII-S5 for cloning a gene encoding a polypeptide  
 having a RNaseHII activity from Bacillus caldotenax  
  
 <400> 101  
 acgcctattt gccggggcctt 20  
  
 <210> 102  
 <211> 20  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> PCR primer RNII-S6 for cloning a gene encoding a polypeptide  
 having a RNaseHII activity from Bacillus caldotenax

<400> 102  
atgaccgacg cagcggcgat 20

<210> 103  
<211> 39  
<212> DNA  
<213> Artificial

<220>  
<223> PCR primer RNII-Nde for cloning a gene encoding a polypeptide  
having a RNaseHII activity from Bacillus caldotenax

<400> 103  
tagaagaggg agaggcatat gaagcggat acggtgaaa 39

<210> 104  
<211> 780  
<212> DNA  
<213> Bucillus caldotenax

<400> 104  
atgaagcggg atacgggtgaa agacattgaa gcgctgcttc cgaagcttgg cgcgacgac 60  
ccgcgctggg agatgctgag gcaggatgag cgaaaaagcg tgcaggcgct tcttgcccgt 120  
tttgaaaggc agaaagcgcg ccggcacgcc atcgagcagc ggtgggaaga actaatgcgt 180  
tatgagaggg aactatacgc cgctggcggt agacggatcg ccggcattga tgaggccggg 240  
cgcgccccgc tggccggccc ggtcgctgcc gccgcgggtca tcttgccgaa agacgcctat 300  
ttgcccgggc ttgacgactc gaagcggctg acgcccggaaa agcgcgaggc attgtttgcg 360  
caaattgaag cgtgcgccgt cgccatcggc atcggcacg tcagcgcggc ggagatcgat 420  
gaaaggaata ttacgaagc gacaaggcaa gcgatggcga aagcgggtgaa cgccctttcc 480  
ccgccgctg aacatttget tggtgatgag atggcggtgc cgtgcccact gccgcaacag 540  
cgctcataa aaggagacgc caacagcgct tcaatcgccg ctgcgtcggg catcgccaaa 600  
gtgacgcgag accggtggat gaaagaactg gatcgccgct atccacaata cgggttcgag 660  
cgccatattg gctacggaac gccggaacat ttcgaggcga tccgccccta cggcggttacg 720  
cctgagcacc gtcgttcggt cgcaccgggtg agggaggtgc tgaaggcgag cgagcagctc 780

<210> 105  
<211> 260  
<212> PRT  
<213> Bucillus caldotenax

<400> 105

Met Lys Arg Tyr Thr Val Lys Asp Ile Glu Ala Leu Leu Pro Lys Leu  
 1 5 10 15  
 Gly Ala Asp Asp Pro Arg Trp Glu Met Leu Arg Gln Asp Glu Arg Lys  
 20 25 30  
 Ser Val Gln Ala Leu Leu Ala Arg Phe Glu Arg Gln Lys Ala Arg Arg  
 35 40 45  
 His Ala Ile Glu Gln Arg Trp Glu Glu Leu Met Arg Tyr Glu Arg Glu  
 50 55 60  
 Leu Tyr Ala Ala Gly Val Arg Arg Ile Ala Gly Ile Asp Glu Ala Gly  
 65 70 75 80  
 Arg Gly Pro Leu Ala Gly Pro Val Val Ala Ala Ala Val Ile Leu Pro  
 85 90 95  
 Lys Asp Ala Tyr Leu Pro Gly Leu Asp Asp Ser Lys Arg Leu Thr Pro  
 100 105 110  
 Glu Lys Arg Glu Ala Leu Phe Ala Gln Ile Glu Ala Cys Ala Val Ala  
 115 120 125  
 Ile Gly Ile Gly Ile Val Ser Ala Ala Glu Ile Asp Glu Arg Asn Ile  
 130 135 140  
 Tyr Glu Ala Thr Arg Gln Ala Met Ala Lys Ala Val Asn Ala Leu Ser  
 145 150 155 160  
 Pro Pro Pro Glu His Leu Leu Val Asp Ala Met Ala Val Pro Cys Pro  
 165 170 175  
 Leu Pro Gln Gln Arg Leu Ile Lys Gly Asp Ala Asn Ser Ala Ser Ile  
 180 185 190  
 Ala Ala Ala Ser Val Ile Ala Lys Val Thr Arg Asp Arg Trp Met Lys  
 195 200 205  
 Glu Leu Asp Arg Arg Tyr Pro Gln Tyr Gly Phe Ala Arg His Met Gly  
 210 215 220  
 Tyr Gly Thr Pro Glu His Phe Glu Ala Ile Arg Arg Tyr Gly Val Thr  
 225 230 235 240

Pro Glu His Arg Arg Ser Phe Ala Pro Val Arg Glu Val Leu Lys Ala  
245 250 255

Ser Glu Gln Leu  
260

<210> 106  
<211> 20  
<212> DNA  
<213> Artificial

<220>  
<223> PCR primer BsuIII-1 for cloning a gene encoding a polypeptide  
having a RNaseHIII activity from Bacillus caldotenax

<400> 106  
ggtaaggtct tggttcargg 20

<210> 107  
<211> 20  
<212> DNA  
<213> Artificial

<220>  
<223> PCR primer BsuIII-3 for cloning a gene encoding a polypeptide  
having a RNaseHIII activity from Bacillus caldotenax

<400> 107  
ggaaccggag attayttygg 20

<210> 108  
<211> 20  
<212> DNA  
<213> Artificial

<220>  
<223> PCR primer BsuIII-6 for cloning a gene encoding a polypeptide  
having a RNaseHIII activity from Bacillus caldotenax

<220>  
<221> misc\_feature  
<222> (15)..(15)  
<223> n is a, c, g, or t

<220>  
<221> misc\_feature  
<222> (18)..(18)  
<223> n is a, c, g, or t

<400> 108  
atgattgaag cagcngcnac 20

<210> 109  
 <211> 20  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> PCR primer BsuIII-8 for cloning a gene encoding a polypeptide  
 having a RNaseHIII activity from Bacillus caldotenax  
  
 <220>  
 <221> misc\_feature  
 <222> (15)..(15)  
 <223> n is a, c, g, or t  
  
 <400> 109  
 gtattggcga aatgnarytt 20  
  
 <210> 110  
 <211> 20  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> PCR primer RNIII-S3 for cloning a gene encoding a polypeptide  
 having a RNaseHIII activity from Bacillus caldotenax  
  
 <400> 110  
 cccgatcgtc gtcgccgcgc 20  
  
 <210> 111  
 <211> 20  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> PCR primer BcaRNIII-3 for cloning a gene encoding a polypeptide  
 having a RNaseHIII activity from Bacillus caldotenax  
  
 <400> 111  
 gatacgtgga cactttccgc 20  
  
 <210> 112  
 <211> 915  
 <212> DNA  
 <213> Bucillus caldotenax  
  
 <400> 112  
 gtgattcaag ccgaccaaca gctgcttgac gccttgcgcg ccactacca agacgcctta 60  
 tccgaccggc ttccggctgg agcgttggtt gccgtcaagc gcccggtgt cgatcacc 120  
 gcctaccgct caggcaaagt gctgtttcaa gggaaagcgg cggagcaaga agcagcgaaa 180

tggatatcag gggcgagcgc ctcaaacgaa acagctgacc accagccgtc cgctttggca 240  
 gctcatcaac tcgggtctct ttccgccatc ggttccgatg aagtcggcac cggcgattat 300  
 ttcggcccga tcgtcgtcgc cgccgcctac gtggatcggc cgcataatcg caaaatcgcg 360  
 gcgcttggcg tgaaagattc gaaacaattg aacgatgagg caatcaaacg gatcgcccc 420  
 gccatcatgg aaaccgtgcc gcatgcggtc accgtgttgg acaatgccga atacaaccgc 480  
 tggcagcgaa gcggcatgcc gcagacgaaa atgaaagcgc tccttcacaa ccggacgctc 540  
 gtgaaactcg ttgacgccat cgcgcccgcc gaaccagaag caatcatcat cgacgaattt 600  
 ttaaaacggg attcgtatct ccgttacctt tccgatgaag atcgcattat ccgcgagcgg 660  
 gtgcactgcc ttcccaaggc ggaaagtgtc cacgtatcag tcgccgcgcgc ctcgatcatc 720  
 gcccgctatg tgtttttaga ggagatggag caattatccc gcgccgtcgg cctcctgctt 780  
 ccaaagggc ccggcgccat tgcgatgaa gccgcggcca acatcatccg cgcgcggggg 840  
 gcggaagcgc ttgagacatg cgccaagctt catttcgcca atacaaaaaa ggcgctggac 900  
 atcgccaaac gccgg 915

<210> 113

<211> 305

<212> PRT

<213> *Bucillus caldotenax*

<400> 113

Met Ile Gln Ala Asp Gln Gln Leu Leu Asp Ala Leu Arg Ala His Tyr  
1 5 10 15

Gln Asp Ala Leu Ser Asp Arg Leu Pro Ala Gly Ala Leu Phe Ala Val  
20 25 30

Lys Arg Pro Asp Val Val Ile Thr Ala Tyr Arg Ser Gly Lys Val Leu  
35 40 45

Phe Gln Gly Lys Ala Ala Glu Gln Glu Ala Ala Lys Trp Ile Ser Gly  
50 55 60

Ala Ser Ala Ser Asn Glu Thr Ala Asp His Gln Pro Ser Ala Leu Ala  
65 70 75 80

Ala His Gln Leu Gly Ser Leu Ser Ala Ile Gly Ser Asp Glu Val Gly  
85 90 95

Thr Gly Asp Tyr Phe Gly Pro Ile Val Val Ala Ala Ala Tyr Val Asp  
 100 105 110

Arg Pro His Ile Ala Lys Ile Ala Ala Leu Gly Val Lys Asp Ser Lys  
 115 120 125

Gln Leu Asn Asp Glu Ala Ile Lys Arg Ile Ala Pro Ala Ile Met Glu  
 130 135 140

Thr Val Pro His Ala Val Thr Val Leu Asp Asn Ala Glu Tyr Asn Arg  
 145 150 155 160

Trp Gln Arg Ser Gly Met Pro Gln Thr Lys Met Lys Ala Leu Leu His  
 165 170 175

Asn Arg Thr Leu Val Lys Leu Val Asp Ala Ile Ala Pro Ala Glu Pro  
 180 185 190

Glu Ala Ile Ile Ile Asp Glu Phe Leu Lys Arg Asp Ser Tyr Phe Arg  
 195 200 205

Tyr Leu Ser Asp Glu Asp Arg Ile Ile Arg Glu Arg Val His Cys Leu  
 210 215 220

Pro Lys Ala Glu Ser Val His Val Ser Val Ala Ala Ala Ser Ile Ile  
 225 230 235 240

Ala Arg Tyr Val Phe Leu Glu Glu Met Glu Gln Leu Ser Arg Ala Val  
 245 250 255

Gly Leu Leu Leu Pro Lys Gly Ala Gly Ala Ile Val Asp Glu Ala Ala  
 260 265 270

Ala Asn Ile Ile Arg Ala Arg Gly Ala Glu Ala Leu Glu Thr Cys Ala  
 275 280 285

Lys Leu His Phe Ala Asn Thr Lys Lys Ala Leu Asp Ile Ala Lys Arg  
 290 295 300

Arg  
 305

<210> 114



<211> 39  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> PCR primer BcaRNIIINde for amplifying a gene encoding a polypeptide having a RNaseHIII activity from *Bacillus caldotenax*  
  
 <400> 114  
 cgaacgttgt caaacatat gattcaagcc gaccaacag 39  
  
  
 <210> 115  
 <211> 663  
 <212> DNA  
 <213> *Pyrococcus horikoshii*  
  
 <400> 115  
 atgaaggttg ctggagttga tgaagcgggg agggggccgg taattggccc gttagtaatt 60  
 ggagtagccg ttatagatga gaaaaatatt gagagggttac gtgacattgg ggttaaagac 120  
 tccaaacaat taactcctgg gcaacgtgaa aaactattta gcaaattaat agatataccta 180  
 gacgattatt atgttcttct cgttaccccc aaggaaatag atgagaggca tcattctatg 240  
 aatgaactag aagctgagaa attcgttgta gccttgaatt ctttaaggat caagccgcag 300  
 aagatatatg tggactctgc cgatgtagat cctaagaggt ttgctagtct aataaaggct 360  
 ggggttgaaat atgaagccac ggttatcgcc gagcataaag ccgatgcaaa gtatgagata 420  
 gtatcggcag catcaataat tgcaaaggct actagggata gagagataga gaagctaaag 480  
 caaaagtatg gggaatttgg ttctggctat ccgagtgatc cgagaactaa ggagtggctt 540  
 gaagaatatt acaaacaata tggtagcttt cctccaatag ttaggagaac ttgggaaacc 600  
 gctaggaaga tagaggaaag gtttagaaaa aatcagctaa cgcttgataa attccttaag 660  
 tga 663  
  
 <210> 116  
 <211> 33  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> PCR primer 1650Nde for cloning a gene encoding a polypeptide having a RNaseHII activity from *Pyrococcus furiosus*  
  
 <400> 116  
 caggaggaga gacatatgaa aataggggga att 33  
  
  
 <210> 117  
 <211> 33

<212> DNA  
 <213> Artificial

<220>  
 <223> PCR primer 1650Bam for cloning a gene encoding a polypeptide having a RNaseHII activity from Pyrococcus furiosus

<400> 117  
 gaaggttgat gatccacttt ctaagggttc tta 33

<210> 118  
 <211> 672  
 <212> DNA  
 <213> Pyrococcus furiosus

<400> 118  
 atgaaaatag ggggaattga cgaagcagga agaggaccag cgatagggcc attagtagta 60  
 gctactgtcg tcgttgatga gaaaaacatt gagaagctca gaaacattgg agtaaaagac 120  
 tccaaacaac taacacccca tgaaaggaag aatttatattt cccagataac ctcaatagcg 180  
 gatgattaca aaatagtgat agtatcccca gaagaaatcg acaatagatc aggaacaatg 240  
 aacgagttag aggtagagaa gtttgctctc gccttaaatt cgcttcagat aaaaccagct 300  
 cttatatacg ctgatgcagc ggatgtagat gccaatagat ttgcaagctt gatagagaga 360  
 agactcaatt ataaggcgaa gattattgcc gaacacaagg ccgatgcaaa gtatccagta 420  
 gtttcagcag cttcaatact tgcaaagggt gttagggatg aggaaattga aaaattaaaa 480  
 aagcaatatg gagactttgg ctctgggtat ccaagtgatc caaaaaccaa gaaatggctt 540  
 gaagagtact acaaaaaaca caactctttc cctccaatag tcagacgaac ctgggaaaact 600  
 gtaagaaaaa tagaggaaag cattaaagcc aaaaaatccc agctaacgct tgataaattc 660  
 ttaagaaac ct 672

<210> 119  
 <211> 224  
 <212> PRT  
 <213> Pyrococcus furiosus

<400> 119

Met Lys Ile Gly Gly Ile Asp Glu Ala Gly Arg Gly Pro Ala Ile Gly  
 1 5 10 15

Pro Leu Val Val Ala Thr Val Val Val Asp Glu Lys Asn Ile Glu Lys  
 20 25 30

Leu Arg Asn Ile Gly Val Lys Asp Ser Lys Gln Leu Thr Pro His Glu

35	40	45
Arg Lys Asn Leu Phe Ser Gln Ile Thr Ser Ile Ala Asp Asp Tyr Lys		
50	55	60
Ile Val Ile Val Ser Pro Glu Glu Ile Asp Asn Arg Ser Gly Thr Met		
65	70	75
Asn Glu Leu Glu Val Glu Lys Phe Ala Leu Ala Leu Asn Ser Leu Gln		
85	90	95
Ile Lys Pro Ala Leu Ile Tyr Ala Asp Ala Ala Asp Val Asp Ala Asn		
100	105	110
Arg Phe Ala Ser Leu Ile Glu Arg Arg Leu Asn Tyr Lys Ala Lys Ile		
115	120	125
Ile Ala Glu His Lys Ala Asp Ala Lys Tyr Pro Val Val Ser Ala Ala		
130	135	140
Ser Ile Leu Ala Lys Val Val Arg Asp Glu Glu Ile Glu Lys Leu Lys		
145	150	155
Lys Gln Tyr Gly Asp Phe Gly Ser Gly Tyr Pro Ser Asp Pro Lys Thr		
165	170	175
Lys Lys Trp Leu Glu Glu Tyr Tyr Lys Lys His Asn Ser Phe Pro Pro		
180	185	190
Ile Val Arg Arg Thr Trp Glu Thr Val Arg Lys Ile Glu Glu Ser Ile		
195	200	205
Lys Ala Lys Lys Ser Gln Leu Thr Leu Asp Lys Phe Phe Lys Lys Pro		
210	215	220

<210> 120  
 <211> 28  
 <212> DNA  
 <213> Artificial

<220>  
 <223> PCR primer 915-F1 for cloning a gene encoding a polypeptide  
 having a RNaseHII activity from Thermotoga maritima

<400> 120  
 aaaaagcttg ggaatagatg agctttac

<210> 121  
 <211> 26  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> PCR primer 915-F2 for cloning a gene encoding a polypeptide  
 having a RNaseHII activity from *Thermotoga maritima*  
  
 <400> 121  
 aaaccatggg aatagatgag ctttac 26  
  
 <210> 122  
 <211> 29  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> PCR primer 915-R1 for cloning a gene encoding a polypeptide  
 having a RNaseHII activity from *Thermotoga maritima*  
  
 <400> 122  
 aaatctagat cctcaacttt gtcgatgtg 29  
  
 <210> 123  
 <211> 30  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> PCR primer 915-R2 for cloning a gene encoding a polypeptide  
 having a RNaseHII activity from *Thermotoga maritima*  
  
 <400> 123  
 aatctagatt aaaaaagagg gagattatgg 30  
  
 <210> 124  
 <211> 22  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed oligonucleotide primer designated as MCS-F to amplify a  
 long DNA fragment  
  
 <400> 124  
 ccattcaggc tgcgcaactg tt 22  
  
 <210> 125  
 <211> 22  
 <212> DNA  
 <213> Artificial

<220>  
 <223> Designed oligonucleotide primer designated as MCS-R to amplify a long DNA fragment

<400> 125  
 tggcacgaca ggtttcccga ct 22

<210> 126  
 <211> 24  
 <212> DNA  
 <213> Artificial

<220>  
 <223> Designed chimeric oligonucleotide primer designated as MF2N3(24) to amplify a long DNA fragment. "nucleotides 22 to 24 are ribonucleotides-other nucleotides are deoxyribonucleotides"

<400> 126  
 gctgcaaggc gattaagttg ggua 24

<210> 127  
 <211> 24  
 <212> DNA  
 <213> Artificial

<220>  
 <223> Designed chimeric oligonucleotide primer designated as MR1N3(24) to amplify a long DNA fragment. "nucleotides 22 to 24 are ribonucleotides-other nucleotides are deoxyribonucleotides"

<400> 127  
 ctttatgctt ccggctcgta tguu 24

<210> 128  
 <211> 20  
 <212> DNA  
 <213> Artificial

<220>  
 <223> Designed oligonucleotide primer to amplify a portion of lambda DNA. "nucleotides 18 to 20 are ribonucleotides-other nucleotides are deoxyribonucleotides"

<400> 128  
 cctttctctg tttttgtccg 20

<210> 129  
 <211> 20  
 <212> DNA  
 <213> Artificial

<220>  
 <223> Designed chimeric oligonucleotide primer to amplify a portion of

lambda DNA. "nucleotides 18 to 20 are ribonucleotides-other  
nucleotides are deoxyribonucleotides"

<400> 129  
aagcacctca ttaccctugc 20

<210> 130  
<211> 24  
<212> DNA  
<213> Artificial

<220>  
<223> Designed oligonucleotide primer to amplify a portion of lambda  
DNA

<400> 130  
gggcggcgac ctgcggggtt ttcg 24

<210> 131  
<211> 24  
<212> DNA  
<213> Artificial

<220>  
<223> Designed oligonucleotide primer to amplify a portion of lambda  
DNA

<400> 131  
gctgcttatg ctctataaag tagg 24

<210> 132  
<211> 20  
<212> DNA  
<213> Artificial

<220>  
<223> Designed chimeric oligonucleotide primer to amplify a portion of  
Flavobacterium species DNA. "nucleotides 18 to 20 are  
ribonucleotides-other nucleotides are deoxyribonucleotides"

<400> 132  
aggaatcttt atttaccaug 20

<210> 133  
<211> 20  
<212> DNA  
<213> Artificial

<220>  
<223> Designed chimeric oligonucleotide primer to amplify a portion of  
Flavobacterium species DNA. "nucleotides 18 to 20 are  
ribonucleotides-other nucleotides are deoxyribonucleotides"

<400> 133

tggtgtttaa acttattgcg 20

<210> 134  
<211> 24  
<212> DNA  
<213> Artificial

<220>

<223> Designed oligonucleotide primer to amplify a portion of  
Flavobacterium species DNA.

<400> 134  
ccatcagcta taaacacaaa cagc 24

<210> 135  
<211> 24  
<212> DNA  
<213> Artificial

<220>

<223> Designed oligonucleotide primer to amplify a portion of  
Flavobacterium species DNA.

<400> 135  
tgttttgacc aaacatagta atgc 24

<210> 136  
<211> 21  
<212> DNA  
<213> Artificial

<220>

<223> Designed chimeric oligonucleotide primer to amplify a portion of  
vero toxin 2-encoding sequence from hemorrhagic Escherichia coli  
O-157. "nucleotides 19 to 21 are ribonucleotides-other  
nucleotides are deoxyribonucleotides"

<400> 136  
tcgttaaata gtatacggac a 21

<210> 137  
<211> 20  
<212> DNA  
<213> Artificial

<220>

<223> Designed chimeric oligonucleotide primer to amplify a portion of  
vero toxin 2-encoding sequence from hemorrhagic Escherichia coli  
O-157. "nucleotides 18 to 20 are ribonucleotides-other  
nucleotides are deoxyribonucleotides"

<400> 137  
tgctcaataa tcagacgaag 20

<210> 138  
 <211> 24  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed oligonucleotide primer to amplify a portion of vero toxin 2-encoding sequence from hemorrhagic Escherichia coli O-157.  
  
 <400> 138  
 aaatggggta ctgtgcctgt tact 24  
  
 <210> 139  
 <211> 24  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed oligonucleotide primer to amplify a portion of vero toxin 2-encoding sequence from hemorrhagic Escherichia coli O-157.  
  
 <400> 139  
 ctctgtatct gcctgaagcg taag 24  
  
 <210> 140  
 <211> 21  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed chimeric oligonucleotide primer to amplify a portion of vero toxin 2-encoding sequence from hemorrhagic Escherichia coli O-157. "nucleotides 18 to 20 are ribonucleotides-other nucleotides are deoxyribonucleotides"  
  
 <400> 140  
 tacctgggtt tttcttcggu a 21  
  
 <210> 141  
 <211> 20  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed chimeric oligonucleotide primer to amplify a portion of vero toxin 2-encoding sequence from hemorrhagic Escherichia coli O-157. "nucleotides 18 to 20 are ribonucleotides-other nucleotides are deoxyribonucleotides"  
  
 <400> 141  
 atagactttt cgaccaaca 20



<210> 142  
 <211> 20  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed chimeric oligonucleotide primer to amplify a portion of  
 vero toxin 2-encoding sequence from hemorrhagic Escherichia coli  
 O-157. "nucleotides 18 to 20 are ribonucleotides-other  
 nucleotides are deoxyribonucleotides"  
  
 <400> 142  
 atagacatca agccctcgua 20  
  
 <210> 143  
 <211> 21  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed oligonucleotide primer to amplify a portion of vero  
 toxin 2-encoding sequence from hemorrhagic Escherichia coli  
 O-157.  
  
 <400> 143  
 tcgttaaata gtatacggac a 21  
  
 <210> 144  
 <211> 20  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed oligonucleotide primer to amplify a portion of vero  
 toxin 2-encoding sequence from hemorrhagic Escherichia coli  
 O-157.  
  
 <400> 144  
 atagacatca agccctcgta 20  
  
 <210> 145  
 <211> 20  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed chimeric oligonucleotide primer to amplify a portion of  
 lambda DNA. "nucleotides 18 to 20 are ribonucleotides-other  
 nucleotides are deoxyribonucleotides"  
  
 <400> 145  
 gaacaatgga agtcaacaaa 20

<210> 146  
 <211> 20  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed oligonucleotide primer to amplify a portion of viroid CSVd.  
  
 <400> 146  
 tacttgtggt tcctgtggtg 20  
  
 <210> 147  
 <211> 20  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed oligonucleotide primer to amplify a portion of viroid CSVd.  
  
 <400> 147  
 atactaaggt tccaagggt 20  
  
 <210> 148  
 <211> 18  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed chimeric oligonucleotide primer to amplify a portion of viroid CSVd. "nucleotides 16 to 18 are ribonucleotides-other nucleotides are deoxyribonucleotides"  
  
 <400> 148  
 ggaaacctgg aggaaguc 18  
  
 <210> 149  
 <211> 20  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed chimeric oligonucleotide primer to amplify a portion of viroid CSVd. "nucleotides 18 to 20 are ribonucleotides-other nucleotides are deoxyribonucleotides"  
  
 <400> 149  
 gtgaaaacc tgtttaggau 20  
  
 <210> 150  
 <211> 20  
 <212> DNA  
 <213> Artificial

<220>  
 <223> Designed chimeric oligonucleotide primer to amplify a portion of  
 Flavobacterium species DNA. "nucleotides 18 to 20 are  
 ribonucleotides-other nucleotides are deoxyribonucleotides"

<400> 150  
 acctagatat aagctctaca 20

<210> 151  
 <211> 20  
 <212> DNA  
 <213> Artificial

<220>  
 <223> Designed chimeric oligonucleotide primer to amplify a portion of  
 Flavobacterium species DNA. "nucleotides 18 to 20 are  
 ribonucleotides-other nucleotides are deoxyribonucleotides"

<400> 151  
 aaatagatgt tttagcagag 20

<210> 152  
 <211> 20  
 <212> DNA  
 <213> Artificial

<220>  
 <223> Designed chimeric oligonucleotide primer to amplify a portion of  
 Flavobacterium species DNA. "nucleotides 18 to 20 are  
 ribonucleotides-other nucleotides are deoxyribonucleotides"

<400> 152  
 atagataaaa aaaactccac 20

<210> 153  
 <211> 21  
 <212> DNA  
 <213> Artificial

<220>  
 <223> Designed chimeric oligonucleotide primer to amplify a portion of  
 vero toxin 2-encoding sequence from hemorrhagic Escherichia coli  
 O-157. "nucleotides 19 to 21 are ribonucleotides-nucloetide"

<220>  
 <221> misc\_feature  
 <222> (18)..(18)  
 <223> n is inosine-other nucleotides are deoxyribonucleotides

<400> 153  
 tcgttaaata gtatacgnac a 21

<210> 154  
 <211> 21  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed chimeric oligonucleotide primer to amplify a portion of  
 vero toxin 2-encoding sequence from hemorrhagic Escherichia coli  
 O-157. nucleotides 19 to 21 are ribonucleotides-nucleotide  
  
 <220>  
 <221> misc\_feature  
 <222> (17)..(17)  
 <223> n is inosine other nucleotides are deoxyribonucleotides  
  
 <400> 154  
 tcgttaaata gtatacngac a 21  
  
 <210> 155  
 <211> 21  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed chimeric oligonucleotide primer to amplify a portion of  
 vero toxin 2-encoding sequence from hemorrhagic Escherichia coli  
 O-157. nucleotides 19 to 21 are ribonucleotides-nucleotide  
  
 <220>  
 <221> misc\_feature  
 <222> (16)..(16)  
 <223> n is inosine-other nucleotides are deoxyribonucleotides  
  
 <400> 155  
 tcgttaaata gtatanggac a 21  
  
 <210> 156  
 <211> 20  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed chimeric oligonucleotide primer to amplify a portion of  
 vero toxin 2-encoding sequence from hemorrhagic Escherichia coli  
 O-157. nucleotides 18 to 20 are ribonucleotides-nucleotide  
  
 <220>  
 <221> misc\_feature  
 <222> (17)..(17)  
 <223> n is inosine-other nucleotides are deoxyribonucleotides"  
  
 <400> 156  
 tgctcaataa tcagacnaag 20

<210> 157  
 <211> 20  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed chimeric oligonucleotide primer to amplify a portion of  
 vero toxin 2-encoding sequence from hemorrhagic Escherichia coli  
 O-157. "nucleotides 18 to 20 are ribonucleotides-nucleotide  
  
 <220>  
 <221> misc\_feature  
 <222> (16)..(16)  
 <223> n is inosine-other nucleotides are deoxyribonucleotides  
  
 <400> 157  
 tgctcaataa tcagangaag 20  
  
 <210> 158  
 <211> 20  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed chimeric oligonucleotide primer to amplify a portion of  
 vero toxin 2-encoding sequence from hemorrhagic Escherichia coli  
 O-157. "nucleotides 18 to 20 are ribonucleotides-nucleotide  
  
 <220>  
 <221> misc\_feature  
 <222> (15)..(15)  
 <223> n is inosine-other nucleotides are deoxyribonucleotides  
  
 <400> 158  
 tgctcaataa tcagncgaag 20  
  
 <210> 159  
 <211> 21  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed chimeric oligonucleotide primer to amplify a portion of  
 vero toxin 2-encoding sequence from hemorrhagic Escherichia coli  
 O-157. "nucleotides 9 to 11 and 19 to 21 are  
 ribonucleotides-other nucleotides are deoxyribonucleotides"  
  
 <400> 159  
 tacctggguu uttcttcggu a 21  
  
 <210> 160

<211> 20  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed chimeric oligonucleotide primer to amplify a portion of  
 vero toxin 2-encoding sequence from hemorrhagic Escherichia coli  
 O-157. "nucleotides 8 to 10 and 18 to 20 are  
 ribonucleotides-other nucleotides are deoxyribonucleotides"  
  
 <400> 160  
 atagacauca agccctcgua 20  
  
 <210> 161  
 <211> 20  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed chimeric oligonucleotide primer to amplify a portion of  
 vero toxin 2-encoding sequence from hemorrhagic Escherichia coli  
 O-157. "nucleotides 18 to 20 are ribonucleotides-other  
 nucleotides are deoxyribonucleotides"  
  
 <400> 161  
 gtcccctgag atatatguuc 20  
  
 <210> 162  
 <211> 30  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed oligonucleotide probe to detect a DNA fragment amplifying  
 a portion of vero toxin 2-encoding sequence from hemorrhagic  
 Escherichia coli O-157.  
  
 <400> 162  
 ccaacaaagt tatgtctctt cgttaaatag 30  
  
 <210> 163  
 <211> 20  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed chimeric oligonucleotide primer to amplify a portion of  
 iNOS-encoding sequence from mouse. "nucleotides 18 to 20 are  
 ribonucleotides-other nucleotides are deoxyribonucleotides"  
  
 <400> 163  
 atgccattga gttcatcaac 20  
  
 <210> 164

<211> 19  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed chimeric oligonucleotide primer to amplify a portion of  
 iNOS-encoding sequence from mouse. "nucleotides 17 to 19 are  
 ribonucleotides-other nucleotides are deoxyribonucleotides"  
  
 <400> 164  
 tcttggtggc aaagatgag 19  
  
 <210> 165  
 <211> 20  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed oligonucleotide primer to amplify a portion of  
 iNOS-encoding sequence from mouse.  
  
 <400> 165  
 atgccattga gttcatcaac 20  
  
 <210> 166  
 <211> 19  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed oligonucleotide primer to amplify a portion of  
 iNOS-encoding sequence from mouse  
  
 <400> 166  
 tcttggtggc aaagatgag 19  
  
 <210> 167  
 <211> 20  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed oligonucleotide primer designated as GMO-PCR-F 20mer  
  
 <400> 167  
 atcggttgaag atgcctctgc 20  
  
 <210> 168  
 <211> 20  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> designed oligonucleotide primer designated as GMO-PCR-R 20mer

<400> 168  
tccgtatgat cgcgcgatcat 20

<210> 169  
<211> 20  
<212> DNA  
<213> Artificial

<220>  
<223> Designed chimeric oligonucleotide primer designated as GMO-S1  
20mer. "nucleotides 19 to 20 are ribonucleotides-other  
nucleotides are deoxyribonucleotides"

<400> 169  
tttgagagg acacgctgac 20

<210> 170  
<211> 20  
<212> DNA  
<213> Artificial

<220>  
<223> Designed oligonucleotide primer designated as GMO-S2 20mer.  
"nucleotides 19 to 20 are ribonucleotides-other nucleotides are  
deoxyribonucleotides"

<400> 170  
ggacacgctg acaagctgac 20

<210> 171  
<211> 20  
<212> DNA  
<213> Artificial

<220>  
<223> Designed oligonucleotide primer designated as GMO-A1 20mer.  
"nucleotides 19 to 20 are ribonucleotides-other nucleotides are  
deoxyribonucleotides"

<400> 171  
ggctgtagcc actgatgcug 20

<210> 172  
<211> 20  
<212> DNA  
<213> Artificial

<220>  
<223> Designed oligonucleotide primer designated as GMO-A2 20 mer.  
"nucleotides 19 to 20 are ribonucleotides-other nucleotides are  
deoxyribonucleotides"

<400> 172



ttccggaaag gccagaggau

20

<210> 173  
<211> 20  
<212> DNA  
<213> Artificial

<220>

<223> Designed chimeric oligonucleotide primer to amplify a portion of  
vero toxin 2-encoding sequence from hemorrhagic Escherichia coli  
O-157. "nucleotides 18 to 20 are  
(alpha-thio)ribonucleotides-other nucleotides are

<400> 173  
tactgggttt ttcttcggua

20

<210> 174  
<211> 20  
<212> DNA  
<213> Artificial

<220>

<223> Designed chimeric oligonucleotide primer to amplify a portion of  
vero toxin 2-encoding sequence from hemorrhagic Escherichia coli  
O-157. "nucleotides 18 to 20 are  
(alpha-thio)ribonucleotides-other nucleotides are

<400> 174  
atagacatca agccctcgua

20

<210> 175  
<211> 22  
<212> DNA  
<213> Artificial

<220>

<223> Designed chimeric oligonucleotide primer to amplify a portion of  
INOS-encoding sequence from mouse."nucleotides 20 to 22 are  
ribonucleotides-other nucleotides are deoxyribonucleotides"

<400> 175  
tcatgccatt gagttcatca ac

22

<210> 176  
<211> 22  
<212> DNA  
<213> Artificial

<220>

<223> Designed chimeric oligonucleotide primer to amplify a portion of  
INOS-encoding sequence from mouse."nucleotides 20 to 22 are  
ribonucleotides-other nucleotides are deoxyribonucleotides"

<400> 176  
 tggtagggttc ctgttggtttc ua 22

<210> 177  
 <211> 22  
 <212> DNA  
 <213> Artificial

<220>  
 <223> Designed oligonucleotide primer to amplify a portion of  
 INOS-encoding sequence from mouse.

<400> 177  
 tcatgccatt gagttcatca ac 22

<210> 178  
 <211> 22  
 <212> DNA  
 <213> Artificial

<220>  
 <223> Designed oligonucleotide primer to amplify a portion of  
 INOS-encoding sequence from mouse.

<400> 178  
 tggtagggttc ctgttggtttc ta 22

<210> 179  
 <211> 20  
 <212> DNA  
 <213> Artificial

<220>  
 <223> Designed chimeric oligonucleotide primer to amplify a portion of  
 lambda DNA."nucleotides 18 to 20 are ribonucleotides-other  
 nucleotides are deoxyribonucleotides"

<400> 179  
 ctgcgaggcg gtggcaaggg 20

<210> 180  
 <211> 21  
 <212> DNA  
 <213> Artificial

<220>  
 <223> Designed chimeric oligonucleotide primer to amplify a portion of  
 lambda DNA."nucleotides 19 to 21 are ribonucleotides-other  
 nucleotides are deoxyribonucleotides"

<400> 180  
 ctgcctcgct ggccgtgccg c 21

<210> 181  
 <211> 23  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed chimeric oligonucleotide primer to amplify a portion of  
 INOS-encoding sequence from mouse."nucleotides 21 to 23 are  
 ribonucleotides-other nucleotides are deoxyribonucleotides"  
  
 <400> 181  
 ctcatgccat tgagttcatc aac 23  
  
 <210> 182  
 <211> 22  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed chimeric oligonucleotide primer to amplify a portion of  
 INOS-encoding sequence from mouse."nucleotides 20 to 22 are  
 ribonucleotides-other nucleotides are deoxyribonucleotides"  
  
 <400> 182  
 gctggtaggt tcctgttgtu uc 22  
  
 <210> 183  
 <211> 19  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed chimeric oligonucleotide primer to amplify a portion of  
 pDON-AI DNA."nucleotides 17 to 19 are ribonucleotides-other  
 nucleotides are deoxyribonucleotides"  
  
 <400> 183  
 agctctgtat ctggcggac 19  
  
 <210> 184  
 <211> 21  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed chimeric oligonucleotide primer to amplify a portion of  
 pDON-AI DNA."nucleotides 19 to 21 are ribonucleotides-other  
 nucleotides are deoxyribonucleotides"  
  
 <400> 184  
 gatcgggatt tttggactca g 21  
  
 <210> 185

<211> 21  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed chimeric oligonucleotide primer to amplify a portion of HPV type16 DNA."nucleotides 19 to 21 are ribonucleotides-other nucleotides are deoxyribonucleotides"  
  
 <400> 185  
 caaaagagaa ctgcaatguu u 21  
  
 <210> 186  
 <211> 25  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed chimeric oligonucleotide primer to amplify a portion of HPV type16 DNA."nucleotides 19 to 21 are ribonucleotides-other nucleotides are deoxyribonucleotides"  
  
 <400> 186  
 cgcctccatc cagtctatta atugu 25  
  
 <210> 187  
 <211> 27  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed oligonucleotide probe to detect a DNA fragment amplifying a portion of HPV DNA.  
  
 <400> 187  
 gaggacccac aggagcgcacc cagaaaag 27  
  
 <210> 188  
 <211> 20  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed oligonucleotide primer to amplify a portion of HCV.  
  
 <400> 188  
 cactccacca tgaatcactc 20  
  
 <210> 189  
 <211> 20  
 <212> DNA  
 <213> Artificial  
  
 <220>

<223> Designed oligonucleotide primer to amplify a portion of HCV.

<400> 189  
ggtgcacggt ctacgagacc 20

<210> 190  
<211> 21  
<212> DNA  
<213> Artificial

<220>  
<223> Designed chimeric oligonucleotide primer to amplify a portion of HCV."nucleotides 19 to 21 are ribonucleotides-other nucleotides are deoxyribonucleotides"

<400> 190  
ctgtgaggaa ctactgtcuu c 21

<210> 191  
<211> 18  
<212> DNA  
<213> Artificial

<220>  
<223> Designed chimeric oligonucleotide primer to amplify a portion of HCV."nucleotides 16 to 18 are ribonucleotides-other nucleotides are deoxyribonucleotides"

<400> 191  
gcagaccact atggcucu 18

<210> 192  
<211> 30  
<212> DNA  
<213> Artificial

<220>  
<223> Designed oligonucleotide probe to detect a DNA fragment amplifying portion of HCV.

<400> 192  
gtatgagtgt cgtgcagcct ccaggacccc 30

<210> 193  
<211> 21  
<212> DNA  
<213> Artificial

<220>  
<223> Designed chimeric oligonucleotide primer to amplify a portion of adenovirus."nucleotides 19 to 21 are ribonucleotides-other nucleotides are deoxyribonucleotides"

<400> 193

tgagacatat tatctgccac g 21

<210> 194  
<211> 21  
<212> DNA  
<213> Artificial

<220>  
<223> Designed chimeric oligonucleotide primer to amplify a portion of adenovirus."nucleotides 19 to 21 are ribonucleotides-other nucleotides are deoxyribonucleotides"

<400> 194  
aaatggctag gaggtggaag a 21

<210> 195  
<211> 21  
<212> DNA  
<213> Artificial

<220>  
<223> Designed chimeric oligonucleotide primer to amplify a portion of adenovirus."nucleotides 19 to 21 are ribonucleotides-other nucleotides are deoxyribonucleotides"

<400> 195  
ttatcagcca gtacctctuc g 21

<210> 196  
<211> 21  
<212> DNA  
<213> Artificial

<220>  
<223> Designed oligonucleotide primer to amplify a portion of adenovirus

<400> 196  
tgagacatat tatctgccac g 21

<210> 197  
<211> 21  
<212> DNA  
<213> Artificial

<220>  
<223> Designed oligonucleotide primer to amplify a portion of adenovirus.

<400> 197  
aaatggctag gaggtggaag a 21

<210> 198

<211> 20  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed oligonucleotide primer to amplify a portion of viroid CSVd.  
  
 <400> 198  
 ggggaaacct ggaggaagtc 20  
  
 <210> 199  
 <211> 20  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed oligonucleotide primer to amplify a portion of viroid CSVd.  
  
 <400> 199  
 cgggtagtag ccaaaggaag 20  
  
 <210> 200  
 <211> 19  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed oligonucleotide primer to amplify a portion of pDON-AI DNA.  
  
 <400> 200  
 agctctgtat ctggcggac 19  
  
 <210> 201  
 <211> 21  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed oligonucleotide primer to amplify a portion of pDON-AI DNA.  
  
 <400> 201  
 gatcgggatt tttggactca g 21  
  
 <210> 202  
 <211> 20  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed chimeric oligonucleotide primer to amplify a portion of

verotoxin-1 encoding sequence from hemorrhagic Escherichia coli  
0-157."nucleotides 18 to 20 are ribonucleotides-other nucleotides  
are deoxyribonucleotides"

<400> 202  
ggggataatt tgtttgcagu 20

<210> 203  
<211> 20  
<212> DNA  
<213> Artificial

<220>  
<223> Designed chimeric oligonucleotide primer to amplify a portion of  
verotoxin-1 encoding sequence from hemorrhagic Escherichia coli  
0-157."nucleotides 18 to 20 are ribonucleotides-other nucleotides  
are deoxyribonucleotides"

<400> 203  
tcgttcaaca ataagccgua 20

<210> 204  
<211> 30  
<212> DNA  
<213> Artificial

<220>  
<223> Designed oligonucleotide probe to detect a DNA fragment  
amplifying a portion of verotoxin-1 encoding sequence from  
hemorrhagic Escherichia coli 0-157.

<400> 204  
cgcccttcct ctggatctac ccctctgaca 30

<210> 205  
<211> 21  
<212> DNA  
<213> Artificial

<220>  
<223> Designed chimeric oligonucleotide primer to amplify a portion of  
botulinum toxin A encoding sequence from Clostridium  
botulinum."nucleotides 19 to 21 are ribonucleotides-other  
nucleotides are deoxyribonucleotides"

<400> 205  
caccagaagc aaaacaaguu c 21

<210> 206  
<211> 23  
<212> DNA  
<213> Artificial

<220>



<223> Designed chimeric oligonucleotide primer to amplify a portion of botulinum toxin A encoding sequence from Clostridium botulinum."nucleotides 21 to 23 are ribonucleotides-other nucleotides are deoxyribonucleotides"

<400> 206  
ctattgatgt taacaacatt cuu 23

<210> 207  
<211> 30  
<212> DNA  
<213> Artificial

<220>  
<223> Designed oligonucleotide probe to detect a DNA fragment amplifying a portion of botulinum toxin A encoding sequence from Clostridium botulinum.

<400> 207  
gggagttaca aaattatttg agagaattta 30

<210> 208  
<211> 21  
<212> DNA  
<213> Artificial

<220>  
<223> Designed chimeric oligonucleotide primer to amplify a portion of viroid CSVd."nucleotides 19 to 21 are ribonucleotides-other nucleotides are deoxyribonucleotides"

<400> 208  
cacccttcct ttagtttccu u 21

<210> 209  
<211> 20  
<212> DNA  
<213> Artificial

<220>  
<223> Designed chimeric oligonucleotide primer to amplify a portion of viroid CSVd."nucleotides 18 to 20 are ribonucleotides-other nucleotides are deoxyribonucleotides"

<400> 209  
cggtgaagct tcagttguuu 20

<210> 210  
<211> 30  
<212> DNA  
<213> Artificial

<220>  
<223> Designed oligonucleotide probe to detect a DNA fragment

amplifying a portion of viroid CSVd.

<400> 210  
ccttcctctc ctggagaggt cttctgccct 30

<210> 211  
<211> 21  
<212> DNA  
<213> Artificial

<220>  
<223> Designed chimeric oligonucleotide primer to amplify a portion of  
viroid CSVd."nucleotides 19 to 21 are ribonucleotides-other  
nucleotides are deoxyribonucleotides"

<400> 211  
cacccttcct ttagtttccu u 21

<210> 212  
<211> 21  
<212> DNA  
<213> Artificial

<220>  
<223> Designed chimeric oligonucleotide primer to amplify a portion of  
viroid CSVd."nucleotides 19 to 21 are ribonucleotides-other  
nucleotides are deoxyribonucleotides"

<400> 212  
cggtgaagct tcagttgtuu c 21

<210> 213  
<211> 21  
<212> DNA  
<213> Artificial

<220>  
<223> Designed oligonucleotide primer to amplify a portion of viroid  
CSVd.

<400> 213  
cacccttcct ttagtttcct t 21

<210> 214  
<211> 21  
<212> DNA  
<213> Artificial

<220>  
<223> Designed oligonucleotide primer to amplify a portion of viroid  
CSVd.

<400> 214  
cggtgaagct tcagttgttt c 21

<210> 215  
 <211> 20  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed chimeric oligonucleotide primer to amplify a portion of  
 c-ki-ras oncogene."nucleotides 18 to 20 are ribonucleotides-other  
 nucleotides are deoxyribonucleotides"  
  
 <400> 215  
 gactgaatat aaacttgugg 20  
  
 <210> 216  
 <211> 20  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed chimeric oligonucleotide primer to amplify a portion of  
 c-ki-ras oncogene."nucleotides 18 to 20 are ribonucleotides-other  
 nucleotides are deoxyribonucleotides"  
  
 <400> 216  
 ctattgttgg atcatatucg 20  
  
 <210> 217  
 <211> 20  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed oligonucleotide primer to amplify a portion of c-ki-ras  
 oncogene.  
  
 <400> 217  
 gactgaatat aaacttgtgg 20  
  
 <210> 218  
 <211> 20  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed oligonucleotide primer to amplify a portion of c-ki-ras  
 oncogene.  
  
 <400> 218  
 ctattgttgg atcatattcg 20  
  
 <210> 219  
 <211> 20

<212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed chimeric oligonucleotide primer to amplify a portion of  
 verotoxin-2 encoding sequence from hemorrhagic Escherichia coli  
 O-157."nucleotides 18 to 20 are ribonucleotides-other nucleotides  
 are deoxyribonucleotides"  
  
 <400> 219  
 gacttttcga cccaacaaag 20  
  
 <210> 220  
 <211> 20  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed chimeric oligonucleotide primer to amplify a portion of  
 verotoxin-2 encoding sequence from hemorrhagic Escherichia coli  
 O-157."nucleotides 18 to 20 are ribonucleotides-other nucleotides  
 are deoxyribonucleotides"  
  
 <400> 220  
 atatccacag caaaataacu 20  
  
 <210> 221  
 <211> 21  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed oligonucleotide primer to amplify a portion of  
 INOS-encoding sequence from mouse.  
  
 <400> 221  
 cacaaggcca catcggattt c 21  
  
 <210> 222  
 <211> 21  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed oligonucleotide primer to amplify a portion of  
 INOS-encoding sequence from mouse.  
  
 <400> 222  
 tgcataccac ttcaacccga g 21  
  
 <210> 223  
 <211> 25  
 <212> DNA  
 <213> Artificial

<220>  
 <223> Designed oligonucleotide primer designated as pUC19 upper 150 to  
 amplify a portion of plasmid pUC19.

<400> 223  
 ggtgtcacgc tcgtcgtttg gtatg 25

<210> 224  
 <211> 25  
 <212> DNA  
 <213> Artificial

<220>  
 <223> Designed chimeric oligonucleotide primer designated as pUC19  
 lower NN to amplify a portion of plasmid pUC19.

<400> 224  
 gataacactg cggccaactt acttc 25

<210> 225  
 <211> 21  
 <212> DNA  
 <213> Artificial

<220>  
 <223> Designed chimeric oligonucleotide primer designated as SEA-1 to  
 amplify a portion of Staphylococcus aureus."nucleotides 19 to 21  
 are ribonucleotides-other nucleotides are deoxyribonucleotides"

<400> 225  
 tgtatgtatg gtggtgtaac g 21

<210> 226  
 <211> 21  
 <212> DNA  
 <213> Artificial

<220>  
 <223> Designed chimeric oligonucleotide primer designated as SEA-2 to  
 amplify a portion of Staphylococcus aureus."nucleotides 19 to 21  
 are ribonucleotides-other nucleotides are deoxyribonucleotides"

<400> 226  
 taaccgtttc caaagggtacu g 21

<210> 227  
 <211> 19  
 <212> DNA  
 <213> Artificial

<220>  
 <223> Designed chimeric oligonucleotide primer designated as HCV-F3 to  
 amplify a portion of HCV. "nucleotides 17 to 19 are

ribonucleotides-other nucleotides are deoxyribonucleotides"

<400> 227  
gcgtctagcc atggcguaa 19

<210> 228  
<211> 18  
<212> DNA  
<213> Artificial

<220>  
<223> Designed chimeric oligonucleotide primer designated as HCV-R1 to  
amplify a portion of HCV. "nucleotides 16 to 18 are  
ribonucleotides-other nucleotides are deoxyribonucleotides"

<400> 228  
gcagaccact atggcucu 18

<210> 229  
<211> 30  
<212> DNA  
<213> Artificial

<220>  
<223> Designed oligonucleotide primer designated as MF2 to amplify a  
portion of pUC19 plasmid DNA.

<400> 229  
ggatgtgctg caaggcgatt aagttgggta 30

<210> 230  
<211> 30  
<212> DNA  
<213> Artificial

<220>  
<223> Designed oligonucleotide primer designated as MR1 to amplify a  
portion of pUC19 plasmid DNA.

<400> 230  
tttacacttt atgcttccgg ctcgtatgtt 30

<210> 231  
<211> 21  
<212> DNA  
<213> Artificial

<220>  
<223> Designed oligonucleotide primer to amplify a portion of  
adenovirus.

<400> 231  
ttatcagcca gtacctcttc g 21

<210> 232  
 <211> 714  
 <212> DNA  
 <213> Thermotoga maritima

<400> 232  
 atgggaatag atgagcttta caaaaaagag tttggaatcg tagcaggtgt ggatgaagcg 60  
 ggaagagggt gcctcgcagg tcccgttgtg gcggccgctg tcgttctgga aaaagaaata 120  
 gaaggaataa acgattcaaa acagctttcc cctgcgaaga gggaaagact tttagatgaa 180  
 ataatggaga aggcagcagt tgggttagga attgcgtctc cagaggaaat agatctctac 240  
 aacatattca atgccacaaa acttgctatg aatcgagcac tggagaacct gtctgtgaaa 300  
 ccatcatttg tactcgttga cgggaaagga atcgagttga gcgttcccgg tacatgctta 360  
 gtgaaggagg accagaaaag caaattgata ggagcagctt ccattgttgc gaaggctctc 420  
 agagatagat tgatgagcga gtttcacagg atgtatccac agttttcctt ccacaaacac 480  
 aaaggttacg ccacaaaaga acatctgaac gaaatcagaa agaacggagt tttaccaatc 540  
 caccggctga gttttgaacc tgttttagaa cttctgaccg atgatttggt gagggagttc 600  
 ttcgaaaaag gcctcatctc cgaaaatcga ttcgaacgaa tattgaatct tctgggggcg 660  
 agaaaaagtg tggttttccg gaaagaaaga acaaaccata atctccctct tttt 714

<210> 233  
 <211> 238  
 <212> PRT  
 <213> Thermotoga maritime

<400> 233  
 Met Gly Ile Asp Glu Leu Tyr Lys Lys Glu Phe Gly Ile Val Ala Gly  
 1 5 10 15  
 Val Asp Glu Ala Gly Arg Gly Cys Leu Ala Gly Pro Val Val Ala Ala  
 20 25 30  
 Ala Val Val Leu Glu Lys Glu Ile Glu Gly Ile Asn Asp Ser Lys Gln  
 35 40 45  
 Leu Ser Pro Ala Lys Arg Glu Arg Leu Leu Asp Glu Ile Met Glu Lys  
 50 55 60  
 Ala Ala Val Gly Leu Gly Ile Ala Ser Pro Glu Glu Ile Asp Leu Tyr  
 65 70 75 80

Asn Ile Phe Asn Ala Thr Lys Leu Ala Met Asn Arg Ala Leu Glu Asn  
85 90 95

Leu Ser Val Lys Pro Ser Phe Val Leu Val Asp Gly Lys Gly Ile Glu  
100 105 110

Leu Ser Val Pro Gly Thr Cys Leu Val Lys Gly Asp Gln Lys Ser Lys  
115 120 125

Leu Ile Gly Ala Ala Ser Ile Val Ala Lys Val Phe Arg Asp Arg Leu  
130 135 140

Met Ser Glu Phe His Arg Met Tyr Pro Gln Phe Ser Phe His Lys His  
145 150 155 160

Lys Gly Tyr Ala Thr Lys Glu His Leu Asn Glu Ile Arg Lys Asn Gly  
165 170 175

Val Leu Pro Ile His Arg Leu Ser Phe Glu Pro Val Leu Glu Leu Leu  
180 185 190

Thr Asp Asp Leu Leu Arg Glu Phe Phe Glu Lys Gly Leu Ile Ser Glu  
195 200 205

Asn Arg Phe Glu Arg Ile Leu Asn Leu Leu Gly Ala Arg Lys Ser Val  
210 215 220

Val Phe Arg Lys Glu Arg Thr Asn His Asn Leu Pro Leu Phe  
225 230 235

<210> 234  
<211> 663  
<212> DNA  
<213> Pyrococcus horikoshii

<400> 234  
atgaaggttg ctggagttga tgaagcgggg agggggccgg taattggccc gttagtaatt 60  
ggagtagccg ttatagatga gaaaaatatt gagagggttac gtgacattgg ggttaaagac 120  
tccaaacaat taactcctgg gcaacgtgaa aaactattta gcaaattaat agatataccta 180  
gacgattatt atgttcttct cgttaccccc aaggaaatag atgagaggca tcattctatg 240  
aatgaactag aagctgagaa attcgttgta gccttgaatt ctttaaggat caagccgcag 300  
aagatatatg tggactctgc cgatgtagat cctaagaggt ttgctagtct aataaaggct 360



gggttgaaat atgaagccac gggtatcgcc gagcataaag ccgatgcaaa gtatgagata 420  
gtatcggcag catcaataat tgcaaaggctc actagggata gagagataga gaagctaaag 480  
caaaagtatg gggaatttgg ttctggctat ccgagtgatc cgagaactaa ggagtggctt 540  
gaagaatatt acaaacaata tgggtgacttt cctccaatag ttaggagaac ttgggaaacc 600  
gctaggaaga tagaggaaag gtttagaaaa aatcagctaa cgcttgataa attccttaag 660  
tga 663

<210> 235  
<211> 30  
<212> DNA  
<213> Artificial

<220>  
<223> PCR primer PhoNde for cloning a gene encoding a polypeptide  
having a RNaseHII activity from Pyrococcus horikoshii

<400> 235  
aggaggaaaa tcatatgaag gttgctggag 30

<210> 236  
<211> 30  
<212> DNA  
<213> Artificial

<220>  
<223> PCR primer PhoBam for cloning a gene encoding a polypeptide  
having a RNaseHII activity from Pyrococcus horikoshii

<400> 236  
ttacatgaag gatccaagat cacttaagga 30

<210> 237  
<211> 673  
<212> DNA  
<213> Pyrococcus horikoshii

<400> 237  
atgaaggttg ctggagttga tgaagcgggg agggggccgg taattggccc gttagtaatt 60  
ggagtagccg ttatagatga gaaaaatatt gagagggttac gtgacattgg ggttaaagac 120  
tccaaacaat taactcctgg gcaacgtgaa aaactattta gcaaattaat agatatccta 180  
gacgattatt atgttcttct cgttaccccc aaggaaatag atgagaggca tcattctatg 240  
aatgaactag aagctgagaa attcgttgta gccttgaatt ctttaaggat caagccgcag 300  
aagatatatg tggactctgc cgatgtagat cctaagaggt ttgctagtct aataaaggct 360

gggttgaaat atgaagccac gggttatcgcc gagcataaag ccgatgcaaa gtatgagata 420  
 gtatcggcag catcaataat tgcaaaggtc actagggata gagagataga gaagctaaag 480  
 caaaagtatg gggaatttgg ttctggctat ccgagtgatc cgagaactaa ggagtggctt 540  
 gaagaatatt acaaacaata tgggtgacttt cctccaatag ttagggagaac ttgggaaacc 600  
 gctaggaaga tagaggaaag gtttagaaaa aatcagctaa cgcttgataa attccttaag 660  
 tgatcttgga tcc 673

<210> 238  
 <211> 220  
 <212> PRT  
 <213> *Pyrococcus horikoshii*

<400> 238

Met Lys Val Ala Gly Val Asp Glu Ala Gly Arg Gly Pro Val Ile Gly  
1 5 10 15

Pro Leu Val Ile Gly Val Ala Val Ile Asp Glu Lys Asn Ile Glu Arg  
20 25 30

Leu Arg Asp Ile Gly Val Lys Asp Ser Lys Gln Leu Thr Pro Gly Gln  
35 40 45

Arg Glu Lys Leu Phe Ser Lys Leu Ile Asp Ile Leu Asp Asp Tyr Tyr  
50 55 60

Val Leu Leu Val Thr Pro Lys Glu Ile Asp Glu Arg His His Ser Met  
65 70 75 80

Asn Glu Leu Glu Ala Glu Lys Phe Val Val Ala Leu Asn Ser Leu Arg  
85 90 95

Ile Lys Pro Gln Lys Ile Tyr Val Asp Ser Ala Asp Val Asp Pro Lys  
100 105 110

Arg Phe Ala Ser Leu Ile Lys Ala Gly Leu Lys Tyr Glu Ala Thr Val  
115 120 125

Ile Ala Glu His Lys Ala Asp Ala Lys Tyr Glu Ile Val Ser Ala Ala  
130 135 140

Ser Ile Ile Ala Lys Val Thr Arg Asp Arg Glu Ile Glu Lys Leu Lys  
145 150 155 160

Gln Lys Tyr Gly Glu Phe Gly Ser Gly Tyr Pro Ser Asp Pro Arg Thr  
165 170 175

Lys Glu Trp Leu Glu Glu Tyr Tyr Lys Gln Tyr Gly Asp Phe Pro Pro  
180 185 190

Ile Val Arg Arg Thr Trp Glu Thr Ala Arg Lys Ile Glu Glu Arg Phe  
195 200 205

Arg Lys Asn Gln Leu Thr Leu Asp Lys Phe Leu Lys  
210 215 220

<210> 239  
<211> 626  
<212> DNA  
<213> Archaeoglobus fulgidus

<400> 239  
atgaaggcag gcacgatga ggctggaaag ggctgcgtca tcggcccact ggttggttga 60  
ggagtggctt gcagcgatga ggataggctg agaaagcttg gtgtgaaaga ctccaaaaag 120  
ctaagtcagg ggaggagaga ggaactagcc gaggaataa ggaaaatctg cagaacggag 180  
gttttgaaag tttctccga aaatctcgac gaaaggatgg ctgctaaaac cataaacgag 240  
attttgaagg agtgctacgc tgaaataatt ctcaggctga agccggaaat tgcttatgtt 300  
gacagtcctg atgtgattcc cgagagactt tcgaggggagc ttgaggagat tacgggggtt 360  
agagttgttg ccgagcacaa ggcggacgag aagtatcccc tggtagctgc ggcttcaatc 420  
atcgcaaagg tggaaaggga gcggggagatt gagaggctga aagaaaaatt cgggggatttc 480  
ggcagcggct atgcgagcga tccgaggaca agagaagtgc tgaaggagtg gatagcttca 540  
ggcagaattc cgagctgcgt gagaatgcgc tggaagacgg tgtcaaactc gaggcagaag 600  
acgcttgacg atttctaaac gaaacc 626

<210> 240  
<211> 30  
<212> DNA  
<213> Artificial

<220>  
<223> PCR primer AfuNde for cloning a gene encoding a polypeptide  
having a RNaseHII activity from Archaeoglobus fulgidus

<400> 240  
aagctgggtt tcatatgaag gcaggcatcg 30

<210> 241  
 <211> 30  
 <212> DNA  
 <213> Artificial

<220>  
 <223> PCR primer AfuBam for cloning a gene encoding a polypeptide  
 having a RNaseHII activity from Archaeoglobus fulgidus

<400> 241  
 tggtataaac ggatccgttt agaaatcgtc 30

<210> 242  
 <211> 638  
 <212> DNA  
 <213> Archaeoglobus fulgidus

<400> 242  
 catatgaagg caggcatcga tgaggctgga aagggtcgcg tcatcggccc actggttgtt 60  
 gcaggagtgg cttgcagcga tgaggatagg ctgagaaagc ttggtgtgaa agactccaaa 120  
 aagctaagtc aggggaggag agaggaacta gccgaggaaa taaggaaaat ctgcagaacg 180  
 gaggttttga aagttttctcc cgaaaatctc gacgaaagga tggctgctaa aaccataaac 240  
 gagattttga aggagtgtga cgctgaaata attctcaggc tgaagccgga aattgcttat 300  
 gttgacagtc ctgatgtgat tcccagagaga ctttcgaggg agcttgagga gattacgggg 360  
 ttgagagttg tggccgagca caaggcggac gagaagtatc ccctggtagc tgcggcttca 420  
 atcatcgcaa aggtggaaag ggagcgggag attgagaggc tgaaagaaaa attcggggat 480  
 ttcggcagcg gctatgagag cgatccgagg acaagagaag tgctgaagga gtggatagct 540  
 tcaggcagaa ttccgagctg cgtgagaatg cgctggaaga cgggtgtcaaa tctgaggcag 600  
 aagacgcttg acgatttcta aacggatccc cgggtacc 638

<210> 243  
 <211> 205  
 <212> PRT  
 <213> Archaeoglobus fulgidus

<400> 243

Met Lys Ala Gly Ile Asp Glu Ala Gly Lys Gly Cys Val Ile Gly Pro  
 1 5 10 15

Leu Val Val Ala Gly Val Ala Cys Ser Asp Glu Asp Arg Leu Arg Lys  
 20 25 30

Leu Gly Val Lys Asp Ser Lys Lys Leu Ser Gln Gly Arg Arg Glu Glu  
35 40 45

Leu Ala Glu Glu Ile Arg Lys Ile Cys Arg Thr Glu Val Leu Lys Val  
50 55 60

Ser Pro Glu Asn Leu Asp Glu Arg Met Ala Ala Lys Thr Ile Asn Glu  
65 70 75 80

Ile Leu Lys Glu Cys Tyr Ala Glu Ile Ile Leu Arg Leu Lys Pro Glu  
85 90 95

Ile Ala Tyr Val Asp Ser Pro Asp Val Ile Pro Glu Arg Leu Ser Arg  
100 105 110

Glu Leu Glu Glu Ile Thr Gly Leu Arg Val Val Ala Glu His Lys Ala  
115 120 125

Asp Glu Lys Tyr Pro Leu Val Ala Ala Ala Ser Ile Ile Ala Lys Val  
130 135 140

Glu Arg Glu Arg Glu Ile Glu Arg Leu Lys Glu Lys Phe Gly Asp Phe  
145 150 155 160

Gly Ser Gly Tyr Ala Ser Asp Pro Arg Thr Arg Glu Val Leu Lys Glu  
165 170 175

Trp Ile Ala Ser Gly Arg Ile Pro Ser Cys Val Arg Met Arg Trp Lys  
180 185 190

Thr Val Ser Asn Leu Arg Gln Lys Thr Leu Asp Asp Phe  
195 200 205

<210> 244

<211> 18

<212> DNA

<213> Artificial

<220>

<223> Designed chimeric oligonucleotide primer designated as MTIS2F to amplify a portion of Mycobacterium tuberculosis DNA."nucleotides 16 to 18 are ribonucleotides-other nucleotides are deoxyribonucleotides."

<400> 244

tctcgtccag cgccgcuu

18

<210> 245  
 <211> 21  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed chimeric oligonucleotide primer designated as MTIS2R to amplify a portion of Mycobacterium tuberculosis DNA."nucleotides 19 to 21 are ribonucleotides-other nucleotides are deoxyribonucleotides."  
  
 <400> 245  
 gacaaaggcc acgtaggcga a 21  
  
 <210> 246  
 <211> 20  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed chimeric oligonucleotide primer designated as CT2F to amplify a portion of Chlamydia trachomatis cryptic plasmid DNA."nucleotides 18 to 20 are ribonucleotides-other nucleotides are deoxyribonucleotides."  
  
 <400> 246  
 ctggatttat cggaaccuu 20  
  
 <210> 247  
 <211> 18  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed chimeric oligonucleotide primer designated as CT2R to amplify a portion of Chlamydia trachomatis cryptic plasmid DNA."nucleotides 16 to 18 are ribonucleotides-other nucleotides are deoxyribonucleotides."  
  
 <400> 247  
 aggcctctga aacgacuu 18  
  
 <210> 248  
 <211> 19  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed chimeric oligonucleotide primer designated as K-F-1033(60) to amplify a portion of Mycobacterium tuberculosis DNA."nucleotides 17 to 19 are ribonucleotides-other nucleotides are deoxyribonucleotides."

<400> 248  
cacatcgatc cggttcagc 19

<210> 249  
<211> 20  
<212> DNA  
<213> Artificial

<220>  
<223> Designed chimeric oligonucleotide primer designated as  
K-R-1133(62) to amplify a portion of Mycobacterium tuberculosis  
DNA."nucleotides 18 to 20 are ribonucleotides-other nucleotides  
are deoxyribonucleotides."

<400> 249  
tgatcgtctc ggctagtgca 20

<210> 250  
<211> 22  
<212> DNA  
<213> Artificial

<220>  
<223> Designed chimeric oligonucleotide primer designated as  
K-F-1033(68) to amplify a portion of Mycobacterium tuberculosis  
DNA."nucleotides 20 to 22 are ribonucleotides-other nucleotides  
are deoxyribonucleotides."

<400> 250  
gtacacatcg atccggttca gc 22

<210> 251  
<211> 22  
<212> DNA  
<213> Artificial

<220>  
<223> Designed chimeric oligonucleotide primer designated as  
K-R-1133(68) to amplify a portion of Mycobacterium tuberculosis  
DNA."nucleotides 20 to 22 are ribonucleotides-other nucleotides  
are deoxyribonucleotides."

<400> 251  
gttgatcgtc tcggctagtg ca 22

<210> 252  
<211> 20  
<212> DNA  
<213> Artificial

<220>  
<223> Designed oligonucleotide primer designated as F26 to amplify a  
portion of Mycobacterium tuberculosis DNA.

<400> 252  
 ccggagactc cagttcttgg 20

<210> 253  
 <211> 20  
 <212> DNA  
 <213> Artificial

<220>  
 <223> Designed oligonucleotide primer designated as R1310 to amplify a portion of Mycobacterium tuberculosis DNA.

<400> 253  
 gtctctggcg ttgagcgtag 20

<210> 254  
 <211> 22  
 <212> DNA  
 <213> Artificial

<220>  
 <223> Designed chimeric oligonucleotide primer designated as pDON-AI-68-1 to amplify a portion of pDON-AI."nucleotides 20 to 22 are ribonucleotides-other nucleotides are deoxyribonucleotides."

<400> 254  
 actagctctg tatctggcgg ac 22

<210> 255  
 <211> 23  
 <212> DNA  
 <213> Artificial

<220>  
 <223> Designed chimeric oligonucleotide primer designated as pDON-AI-68-2 to amplify a portion of pDON-AI."nucleotides 21 to 23 are ribonucleotides-other nucleotides are deoxyribonucleotides."

<400> 255  
 acgatcgga tttttggact cag 23

<210> 256  
 <211> 300  
 <212> DNA  
 <213> Homo sapiens proto-oncogene Wnt-5a

<400> 256  
 cactagattt tttgtttggg gaggttggct tgaacataaa tgaaatatcc tgtattttct 60  
 tagggatact tggtagtaa attataatag tagaaataat acatgaatcc cattcacagg 120  
 tttctcagcc caagcaacaa ggtaattgcy tgccattcag cactgcacca gagcagacaa 180



cctatttgag gaaaaacagt gaaatccacc ttcctcttca cactgagccc tctctgattc 240  
 ctccgtggtg tgatgtgatg ctggccacgt ttccaaacgg cagctccact ggggtcccctt 300

<210> 257  
 <211> 300  
 <212> DNA  
 <213> Homo sapiens ribosomal protein S5

<400> 257  
 cgccgagtga cagagacgct caggctgtgt tctcaggatg accgagtggg agacagcagc 60  
 accagcgggtg gcagagaccc cagacatcaa gctctttggg aagtggagca ccgatgatgt 120  
 gcagatcaat gacatttccc tgcaggatta cattgcagtg aaggagaagt atgccaagta 180  
 cctccctcac agtgcagggc ggtatgccgc aaacgctttc cgcaaagctc agtgtcccat 240  
 tgtggagcgc ctactaact ccatgatgat gcacggccgc aacaacggca agaagctcat 300

<210> 258  
 <211> 300  
 <212> DNA  
 <213> Homo sapiens diaphorase

<400> 258  
 tctatacaaa ttttcagaag gttattttct ttatcattgc taaactgatg acttaccatg 60  
 ggatgggggtc cagtcccatg accttgggggt acaattgtaa acctagagtt ttatcaactt 120  
 tggatgaacag ttttggcata atagtcaatt tctacttctg gaagtcattc cattccactg 180  
 ttggtattat ataattcaag gagaatatga taaaacactg ccctcttctg gtgcattgaa 240  
 agaagagatg agaaatgatg aaaagggtgc ctgaaaaatg ggagacagcc tcttacttgc 300

<210> 259  
 <211> 300  
 <212> DNA  
 <213> Human protocadherin

<400> 259  
 agtctcttgg gatcccttaa ccagagcctt tttgccatag ggctgcacac tgggtcaaac 60  
 agtactgccc gtccagtcca agacacagat tcacccaggc agactctcac ggtcttgatc 120  
 aaagacaatg gggagccttc gctctccacc actgctaccc tcaactgtgtc agtaaccgag 180  
 gactctcctg aagcccgagc cgagttcccc tctggctctg cccccggga gcagaaaaaa 240  
 aatctcacct tttatctact tctttcccta atcctgggtt ctgtgggggt tgtgggtcaca 300

<210> 260

<211> 80  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed oligonucleotide for making of pIC62.  
  
 <400> 260  
 catgtacatc acagtagtcg ttcacagggt tttccggcca taatggcctt tcctgtgtgt 60  
 gtgctacagc tagtcagtca 80  
  
 <210> 261  
 <211> 20  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed chimeric oligonucleotide primer designated as  
 ICAN2."nucleotides 19 to 20 are ribonucleotides-other nucleotides  
 are deoxyribonucleotides."  
  
 <400> 261  
 actgactagc tgtagcacac 20  
  
 <210> 262  
 <211> 20  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed chimeric oligonucleotide primer designated as  
 ICAN6."nucleotides 19 to 20 are ribonucleotides-other nucleotides  
 are deoxyribonucleotides."  
  
 <400> 262  
 acatcacagt agtcgttcac 20  
  
 <210> 263  
 <211> 20  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed oligonucleotide primer designated as ICAN2 DNA."  
  
 <400> 263  
 actgactagc tgtagcacac 20  
  
 <210> 264  
 <211> 20  
 <212> DNA  
 <213> Artificial

<220>  
 <223> Designed oligonucleotide primer designated as ICAN6 DNA.

<400> 264  
 acatcacagt agtcgttcac 20

<210> 265  
 <211> 23  
 <212> DNA  
 <213> Artificial

<220>  
 <223> Designed oligonucleotide primer to amplify a portion of ribosomal protein S18-encoding sequence from mouse.

<400> 265  
 gtctctagtg atccctgaga agt 23

<210> 266  
 <211> 23  
 <212> DNA  
 <213> Artificial

<220>  
 <223> Designed oligonucleotide primer to amplify a portion of ribosomal protein S18-encoding sequence from mouse.

<400> 266  
 tggatacacc cacagttcgg ccc 23

<210> 267  
 <211> 23  
 <212> DNA  
 <213> Artificial

<220>  
 <223> Designed oligonucleotide primer to amplify a portion of transferrin receptor (TFR)-encoding sequence from mouse.

<400> 267  
 ccgcgctccg acaagtagat gga 23

<210> 268  
 <211> 23  
 <212> DNA  
 <213> Artificial

<220>  
 <223> Designed oligonucleotide primer to amplify a portion of transferrin receptor (TFR)-encoding sequence from mouse.

<400> 268  
 ccaaagagtg caaggtctgc ctc 23

<210> 269  
 <211> 23  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed oligonucleotide primer to amplify a portion of stromal  
 cell derived factor 4 (Sdf4)-encoding sequence from mouse.  
  
 <400> 269  
 tctgatggat gcaaccgcta gac 23  
  
 <210> 270  
 <211> 23  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed oligonucleotide primer to amplify a portion of stromal  
 cell derived factor 4 (Sdf4)-encoding sequence from mouse.  
  
 <400> 270  
 gaactcttca tgcacgttgc ggg 23  
  
 <210> 271  
 <211> 23  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed oligonucleotide primer to amplify a portion of  
 cytoplasmic beta-actin encoding sequence from mouse.  
  
 <400> 271  
 tgatgggtggg aatgggtcag aag 23  
  
 <210> 272  
 <211> 23  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> Designed oligonucleotide primer to amplify a portion of  
 cytoplasmic beta-actin encoding sequence from mouse.  
  
 <400> 272  
 agaagcactt gcggtgcacg atg 23  
  
 <210> 273  
 <211> 23  
 <212> DNA  
 <213> Artificial

<220>  
 <223> Designed oligonucleotide primer to amplify a portion of ornithine decarboxylase-encoding sequence from mouse.

<400> 273  
 gatgaaagtc gccagagcac atc 23

<210> 274  
 <211> 23  
 <212> DNA  
 <213> Artificial

<220>  
 <223> Designed oligonucleotide primer to amplify a portion of ornithine decarboxylase-encoding sequence from mouse.

<400> 274  
 ttgatacctag cagaagcaca ggc 23

<210> 275  
 <211> 23  
 <212> DNA  
 <213> Artificial

<220>  
 <223> Designed oligonucleotide primer to amplify a portion of hypoxanthine guanine phosphoribosyl transferase (HPRT)-encoding sequence from mouse.

<400> 275  
 ggacaggact gaaagacttg ctc 23

<210> 276  
 <211> 23  
 <212> DNA  
 <213> Artificial

<220>  
 <223> Designed oligonucleotide primer to amplify a portion of hypoxanthine guanine phosphoribosyl transferase (HPRT)-encoding sequence from mouse.

<400> 276  
 gtctggcctg tatccaacac ttc 23

<210> 277  
 <211> 23  
 <212> DNA  
 <213> Artificial

<220>  
 <223> Designed oligonucleotide primer to amplify a portion of tyrosine 3-monooxygenase encoding sequence from mouse.

<400> 277  
atgagctggt gcagaaggcc aag 23

<210> 278  
<211> 23  
<212> DNA  
<213> Artificial

<220>  
<223> Designed oligonucleotide primer to amplify a portion of tyrosine  
3-monooxygenase encoding sequence from mouse.

<400> 278  
ttcccctcct tctcctgctt ctg 23

<210> 279  
<211> 21  
<212> DNA  
<213> Artificial

<220>  
<223> Designed oligonucleotide primer designated as MCS-F.

<400> 279  
ccattcaggc tgcgcaatgt t 21

<210> 280  
<211> 22  
<212> DNA  
<213> Artificial

<220>  
<223> Designed oligonucleotide primer designated as MCS-R

<400> 280  
tggcacgaca ggtttcccga ct 22

<210> 281  
<211> 24  
<212> DNA  
<213> Artificial

<220>  
<223> Designed chimeric oligonucleotide primer designated as MF2N3(24).  
"nucleotides 22 to 24 are ribonucleotides-other nucleotides are  
deoxyribonucleotides."

<400> 281  
gctgcaaggc gattaagttg ggua 24

<210> 282  
<211> 24  
<212> DNA

<213> Artificial

<220>

<223> Designed chimeric oligonucleotide primer designated as MR1N3(24).  
"nucleotides 22 to 24 are ribonucleotides-other nucleotides are  
deoxyribonucleotides."

<400> 282

ctttatgctt ccggctcgta tguu

24

<210> 283

<211> 16

<212> DNA

<213> Artificial

<220>

<223> Designed chimeric oligonucleotide primer designated as MTIS2F-16  
to amplify a portion of Mycobacterium tuberculosis  
DNA."nucleotides 14 to 16 are ribonucleotides-other nucleotides  
are deoxyribonucleotides."

<400> 283

tcgtccagcg ccgcuu

16

<210> 284

<211> 20

<212> DNA

<213> Artificial

<220>

<223> Designed chimeric oligonucleotide primer designated as MTIS2R-ACC  
to amplify a portion of Mycobacterium tuberculosis  
DNA."nucleotides 18 to 20 are ribonucleotides-other nucleotides  
are deoxyribonucleotides."

<400> 284

caaaggccac gtaggcgaac

20

<210> 285

<211> 20

<212> DNA

<213> Artificial

<220>

<223> Designed oligonucleotide primer designated as MTIS-PCR-F-2 to  
amplify a portion of Mycobacterium tuberculosis DNA.

<400> 285

cgaccgcatc aaccgggagc

20

<210> 286

<211> 20

<212> DNA

<213> Artificial

<220>  
 <223> Designed oligonucleotide primer designated as MTIS-PCR-R-2 to  
 amplify a portion of Mycobacterium tuberculosis DNA.

<400> 286  
 cccaggatcc tgcgagcgta 20

<210> 287  
 <211> 45  
 <212> DNA  
 <213> Artificial

<220>  
 <223> Designed oligonucleotide primer designated as SP6-HCV-F to  
 amplify a portion of HCV.

<400> 287  
 ccatttaggt gacactatag aatactgatg ggggcgacac tccac 45

<210> 288  
 <211> 45  
 <212> DNA  
 <213> Artificial

<220>  
 <223> Designed oligonucleotide primer designated as SP6-HCV-R to  
 amplify a portion of HCV

<400> 288  
 agctctaata cgactcacta tagggctcgca agcaccctat caggc 45

<210> 289  
 <211> 20  
 <212> DNA  
 <213> Artificial

<220>  
 <223> Designed chimeric oligonucleotide primer designated as HCV-A S to  
 amplify a portion of HCV. "nucleotides 18 to 20 are  
 ribonucleotides-other nucleotides are deoxyribonucleotides."

<400> 289  
 gggtcctttc ttggatcaac 20

<210> 290  
 <211> 20  
 <212> DNA  
 <213> Artificial

<220>  
 <223> Designed chimeric oligonucleotide primer designated as HCV-A A to  
 amplify a portion of HCV. "nucleotides 18 to 20 are  
 ribonucleotides-other nucleotides are deoxyribonucleotides."



<400> 290  
gaccaaacac tactcggcua

20